(Table II-24 cont)

Resource	Units	Base 1980	AMS MLVL	AMS M PNV	Alt A	Alt B	Alt C	Alt D	Alt E	Alt E1	Alt F	Alt G	Alt H	Alt I	Alt J	Alt K
Capital Investment																
Road Costs	M$	1108														
Decade 1			0	4718	2246	2370	2285	2243	2246	2231	1306	2039	1585	1116	2243	1942
Decade 2			0	3401	3255	3264	3191	2713	2997	2999	2303	2710	1978	1600	2715	1809
Decade 3			0	4295	3038	3325	3139	2936	2906	3287	2623	3238	2314	1773	2936	1072
Decade 4			0	4628	3382	4168	3910	3097	3008	3570	2749	2983	2343	1849	3056	1017
Decade 5			0	3579	2295	2721	2553	2130	2012	3240	2080	2287	1954	1675	2134	798
Decade 10			0	2537	2324	2442	2407	2166	2140	2200	1946	2200	1885	1600	2158	197
Decade 15			0	2294	2051	2178	2125	1923	1949	1996	1748	1921	1623	1413	1925	0
Total Capital Investment																
Costs	M$	9427														
Decade 1			0	15521	8344	9310	8933	8269	8033	9341	6934	8366	6794	5650	8287	9907
Decade 2			0	15747	10783	12159	11380	10232	10382	10509	9473	10480	7930	7223	10218	8921
Decade 3			0	16113	10002	10629	10215	9204	8795	11096	8537	10038	7646	6425	9193	6497
Decade 4			0	16960	10489	12774	12015	9772	9178	11056	9099	10111	7990	6831	9690	8975
Decade 5			0	17482	9311	11400	10720	8670	8056	23180	8222	9820	7868	6693	8686	9302
Decade 10			0	11398	9996	9871	10103	9205	9439	8646	8221	9303	7686	6757	9191	5536
Decade 15			0	9957	8766	8749	8701	8171	8195	7852	7349	8462	6813	5895	8191	4528
Operation and Maintenance																
Costs	M$	4775														
Decade 1			2532	9213	7836	8380	8200	7904	7800	7581	7775	8153	7605	7430	7907	9674
Decade 2			2532	10048	8463	8703	8552	8339	8119	8422	8162	8587	7899	7670	8349	9883
Decade 3			2532	11118	8835	8913	8811	8451	8236	8924	8211	8764	8005	7681	8455	9655
Decade 4			2532	13130	9133	9873	9581	8902	8544	10766	8622	9181	8210	7911	8885	10786
Decade 5			2532	13775	9679	10279	9921	9334	8917	15054	8980	9678	8678	8196	9337	11105
Decade 10			2532	16035	12696	14090	13607	12217	12312	13222	11228	12749	10549	9528	12279	12148
Decade 15			2532	16438	13879	13945	13822	21422	13432	11985	12199	13380	11208	9917	13300	12152
Returns to U S																
Treasury	M$	5169														
Decade 1			6	27083	15686	18598	17506	15400	14165	12451	13955	16681	12094	10095	15380	14328
Decade 2			6	40360	25804	31990	30520	24323	23337	25654	21681	26326	18864	15336	24335	24079
Decade 3			7	58096	38357	47092	44554	39280	36321	48887	36235	42376	30823	25556	39281	45395
Decade 4			8	84833	58954	70099	66898	57987	54397	63601	54254	61343	48123	39734	57963	72498
Decade 5			9	137904	96361	116691	112119	93466	84674	229712	86485	101385	74728	61863	93397	108256
Decade 10			13	161920	139637	157171	154321	128696	134713	119835	109192	130850	94036	76398	129290	119605
Decade 15			18	165720	147939	161941	160933	135340	138165	101796	109129	134631	97888	75741	136068	132438

(Table II-24 cont)

Resource	Units	Base 1980	AMS MLVL	AMS M PNV	Alt A	Alt B	Alt C	Alt D	Alt E	Alt E1	Alt F	Alt G	Alt H	Alt I	Alt J	Alt K
Returns to State/																
Counties	M$	1553														
Decade 1			2	6771	3922	4650	4377	3850	3541	3113	3489	4170	3024	2524	3845	3582
Decade 2			2	10090	6451	7998	7630	6081	5834	6414	5420	6582	4716	3834	6084	6020
Decade 3			2	14524	9589	11773	11139	9820	9080	12222	9059	10594	7706	6389	9820	11349
Decade 4			2	21208	14739	17525	16725	14497	13599	15900	13564	15336	12031	9934	14491	18125
Decade 5			2	34476	24090	29173	28030	23367	21169	57428	21621	25346	18682	15466	23349	27064
Decade 10			3	40480	34909	39293	38580	32174	33678	29959	27298	32713	23509	19100	32323	29901
Decade 15			5	41430	36985	40485	40233	33835	34541	25449	27282	33658	24472	18935	34017	33110
Special Use Returns	M$	13														
Decade 1			6	15	15	15	15	15	15	15	15	15	15	15	15	15
Decade 2			6	17	17	17	17	17	17	17	17	17	17	17	17	17
Decade 3			7	21	21	21	21	21	21	21	21	21	21	21	21	21
Decade 4			8	21	21	21	21	21	21	21	21	21	21	21	21	21
Decade 5			9	21	21	21	21	21	21	21	21	21	21	21	21	21
Decade 10			13	21	21	21	21	21	21	21	21	21	21	21	21	21
Decade 15			18	21	21	21	21	21	21	21	21	21	21	21	21	21
Range Returns	M$	16														
Decade 1			0	30	30	30	30	30	30	30	30	30	30	30	30	30
Decade 2			0	30	30	30	30	30	30	30	30	30	30	30	30	30
Decade 3			0	30	30	30	30	30	30	30	30	30	30	30	30	30
Decade 4			0	33	33	33	33	33	33	33	33	33	33	33	33	33
Decade 5			0	35	35	35	35	35	35	35	35	35	35	35	35	35
Decade 10			0	35	35	35	35	35	35	35	35	35	35	35	35	35
Decade 15			0	35	35	35	35	35	35	35	35	35	35	35	35	35
Timber Returns	M$	5140														
Decade 1			0	27038	15641	18553	17461	15355	14120	12406	13910	16636	12049	10050	15335	14283
Decade 2			0	40313	25757	31943	30473	24276	23290	25607	21634	26279	18817	15289	24288	24032
Decade 3			0	58045	38306	47041	44503	39229	36270	48836	36184	42325	30772	25505	39230	45344
Decade 4			0	84779	58900	70045	66844	57933	54343	63547	54200	61289	48069	39680	57909	72444
Decade 5			0	137848	96305	116635	112063	93410	84618	229656	86429	101329	74672	61807	93341	108200
Decade 10			0	161864	139581	157115	154265	128640	134657	119779	109136	130794	93980	76342	129234	119549
Decade 15			0	165664	147883	161885	160877	135284	138109	101740	109073	134575	97832	75685	136012	132382

(Table II-24 cont)

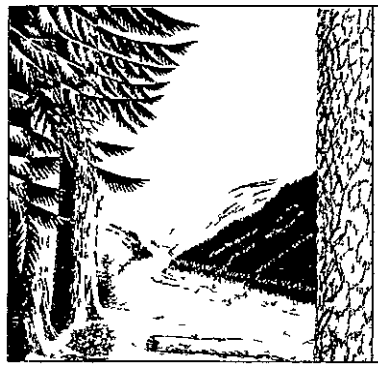
Resource	Units	Base 1980	AMS MLVL	AMS M PNV	Alt A	Alt B	Alt C	Alt D	Alt E	Alt E1	Alt F	Alt G	Alt H	Alt I	Alt J	Alt K
Market Resource Benefits	M$															
Decade 1			427	27657	16253	19180	18081	15959	14733	13015	14528	17245	12657	10653	15965	15610
Decade 2			449	40799	26373	32436	31099	24909	23931	26094	22242	26895	19433	15901	24925	25661
Decade 3			510	58562	38973	47556	45180	39850	36969	49378	36849	42890	31393	26171	39923	47358
Decade 4			571	85300	59645	70587	67582	58688	55112	64141	54926	62018	48808	40413	58669	74543
Decade 5			645	138402	97135	117214	112887	94257	85483	230324	87243	102144	75502	62632	94193	110340
Decade 10			650	162424	140399	157698	155093	129507	135526	120452	109955	131613	94814	77172	130091	121688
Decade 15			655	166228	148707	162473	161710	136140	138983	102433	109896	135400	98671	76520	136874	134522
Non-Market Resource Benefits	M$															
Decade 1			10364	11046	11124	11470	11418	11543	11482	11484	11902	11378	11315	11298	11672	10898
Decade 2			11942	11703	12977	11754	13208	13651	13623	12043	13458	12959	13194	12839	13787	12866
Decade 3			13615	12789	14806	13313	15056	15750	15486	14127	15183	14027	15134	14775	15903	14396
Decade 4			15153	13672	16336	14291	16513	16980	17265	15600	16798	16531	16711	16431	17175	15869
Decade 5			17031	14555	17784	15225	17943	18478	18851	16650	18886	18243	18442	18485	18690	16887
Decade 10			27757	24199	28218	24857	27935	28977	29397	27881	29663	28797	29849	30084	29354	28109
Decade 15			31415	27920	31429	28189	31121	32516	32835	31023	33226	32279	33618	34151	32874	30842
Costs Discounted at 4%	MM$															
Recreation/Wildlife			5 7	42 1	46 8	48 7	42 8	47 8	49 9	53 6	51 7	49 3	56 4	57 2	49 2	25 1
Timber			3	311 1	173 5	209 1	195 0	164 2	153 9	211 9	148 2	178 2	126 2	110 3	164 1	168 2
Roads			14 6	231 7	159 8	175 3	167 7	149 7	148 0	165 4	130 3	152 7	121 0	100 4	149 4	148 7
Other			43 5	95 4	95 5	95 4	95 5	95 6	95 5	95 6	95 7	95 6	95 7	95 8	95 6	136 5
Range			0	1 5	1 5	1 5	1 5	1 5	1 5	1 5	1 4	1 5	1 4	1 4	1 5	1 2
Benefits Discounted at 4%	MM$															
Recreation/Wildlife			338 6	329 7	370 6	340 3	374 9	386 7	389 3	358 9	388 3	372 6	380 6	377 2	391 0	387 9
Range			0	5 7	5 5	5 7	5 6	5 4	5 4	5 4	5 1	5 4	5 0	4 7	5 4	5 8
Timber			0	1657 9	1182 9	1398 6	1348 9	1144 5	1095 2	1414 4	1028 6	1215 5	901 1	723 9	1146 1	1198 9
Other			13 1	8 6	11 9	9 0	12 0	12 3	12 6	9 8	12 3	11 7	12 6	12 7	12 7	11 1
Present Value of the Benefits at 4%	MM$		351 7	2001 9	1570 9	1753 6	1741 5	1548 9	1502 5	1788 4	1434 4	1605 2	1299 2	1118 6	1555 2	1603 7
Present Value of the Costs at 4%	MM$		64 0	681 8	477 2	522 1	502 4	459 7	448 8	527 9	427 3	477 4	400 8	365 1	459 8	479 6

(Table II-24 cont)

Resource	Units	Base 1980	AMS MLVL	AMS M PNV	Alt A	Alt B	Alt C	Alt D	Alt E	Alt E1	Alt F	Alt G	Alt H	Alt I	Alt J	Alt K
Present Net Value 4%	MM$		287 7	1320 1	1093 8	1231 5	1239 1	1089 2	1053 7	1260 5	1007 1	1127 8	898 4	753 5	1095 4	1124 1
Reduction in PNV 4%	MM$		1032 4	0	226 3	88 6	81 0	230 9	266 4	59 6	313 0	192 3	421 7	566 6	224 7	196 0
Benefit/Cost Ratio 4%	MM$		5 5	2 9	3 3	3 4	3 5	3 4	3 4	3 4	3 4	3 4	3 2	3 1	3 4	3 3
Research Natural Areas	ACRES	1281	1281	1281	1281	1281	5167	5932	5932	5932	8932	5267	8932	8932	5932	8268
Forest Work Force Decade 1 (Average Annual)	WYE	445	53	487	448	463	459	447	443	439	444	453	438	432	447	447
Land Designation	M ACRES															
A2-Elk Creek Falls (non-motorized recreation)			0	0	0 8	0	0 8	0 8	0 8	0 8	0 8	0 8	0 8	0 8	0 8	0 8
A3-Unroaded mgt (motorized recreation)			0	0	46 1	0	70 7	201 3	73 6	73 6	88 5	0	0	0	73 5	78 8
A4-Travel Corridors (roads)			0	2 9	58 0	0	0 8	53 0	55 3	55 3	23 1	36 9	44 7	22 9	53 0	47 5
A5-Developed Sites			0	1 8	1 8	1 8	1 8	1 8	1 8	1 8	1 8	1 8	1 8	1 8	1 8	1 8
A6-Travel Corridors (trails)			0	0	34 0	0	0	18 8	18 8	18 8	38 4	32 5	8 8	3 4	18 8	16 2
A7-Recreation River Corridor			0	23 6	23 6	23 6	23 6	23 6	23 6	23 6	23 6	23 6	10 9	3 9	23 6	23 6
B1-Wilderness (existing)			0	259 2	259 2	259 2	259 2	259 2	259.2	259 2	259 2	259 2	259 2	259 2	259 2	259 2
B2-Wilderness (proposed)			0	0	190 4	0	45 5	130 4	188 9	188 9	297 2	454 0	715 5	950 3	258 3	198 2
C1-Unroaded Mgt (100% elk pot no timber mgt)			0	0	0	0	0	61 6	45 1	45.1	142 7	0	14 4	0	65 0	45 1
C2-Big-Game Summer Range (50% elk potential,timber management)			0	59 7	13 9	0	0	0	0	0	0	0	0	0	0	0
C3-Big-Game Winter Range (burning)			0	1 0	41 8	27 3	31 9	34 7	34 4	33 3	53 9	28 1	14 2	2 2	34 7	39 0

(Table II-24 cont)

Resource	Units	Base 1980	AMS MLVL	AMS M PNV	Alt A	Alt B	Alt C	Alt D	Alt E	Alt E1	Alt F	Alt G	Alt H	Alt I	Alt J	Alt K
Land Designations (continued)	M ACRES															
C4-Big-Game Winter Range (timber)			0	33 4	68 8	102 1	96 7	78 9	75 5	76 1	66 3	86 0	62 2	54 7	79 0	94 0
C6-Unroaded Mgt (100% fisheries)			0	0	46 6	0	0	30 4	69 7	69 7	59 3	0	0	0	30 4	102 4
C2S-Big-Game Summer Range (75% elk potential,timber management)			0	5 9	0	0	8 4	92 9	186 8	192 0	67 6	0	72 3	0	124 8	N/A
C6S-Fishery Mgt (timber mgt)			0	0	0	0	4 2	27 0	49 2	51 6	20 6	0	30 4	0	27 0	N/A
C8S-Wildlife/Fish-Timber			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	207 5
E1-Intensive Timber Management			0	1026 9	753 1	932 7	911 9	559 0	480 0	482 6	468 4	697 3	395 2	410 1	535 2	503 6
E3-Timber Mgt (aerial systems)			0	2 8	6 3	11 1	5 9	3 1	4 3	4 3	3 0	1 7	0	0	3 1	12 0
M1-Research Natural Areas			0	0 6	0 6	0 6	3 5	4 8	4 0	4 0	7 0	1 6	4 9	0 3	4 0	8 3
M2-Riparian Areas			0	116 9	106 5	107 0	106 4	108 3	127 5	127 5	105 7	105 2	80 3	56 4	108 3	107 3
M6-Minimum Level Mgt			1837 1	78 3	56 3	147 6	95 5	61 9	39 7	30 0	43 4	24 1	54 9	42 7	51 0	0 0
Unsuitable			0	224 1	129 3	224 1	170 3	85 6	98 9	98 9	66 6	84 3	66 6	28 3	85 6	92 0



Chapter III

Affected Environment

III. AFFECTED ENVIRONMENT

This chapter describes the environment that may be changed by the implementation of the preferred alternative or alternative plans considered. This description is presented in three sections. Section A gives a general description of the Forest; Section B describes the physical, biological and socioeconomic setting; and Section C describes the Clearwater's current resource situation.

A. GENERAL SETTING

The Clearwater National Forest is located in north central Idaho primarily in Clearwater, Latah, and Idaho Counties. Small portions of the Forest are located in Lewis, Benewah, and Shoshone Counties. Encompassing 1.8 million acres, the Clearwater lies west of the Montana border and is bound on three sides by four other National Forests: to the east are the Lolo and Bitterroot Forests; to the south is the Nez Perce Forest; and to the north is the Idaho Panhandle Forest. The Clearwater's main office is located in Orofino, Idaho, with ranger stations in Kamiah, Kooskia, Potlatch, Powell, and Orofino.

The Forest provides a source of income and Federal employment by managing resources such as outdoor recreation, wildlife and fish habitats, quality streams, timber, minerals, range land, and cultural resources. About eleven percent of the jobs in the area are generated directly or indirectly from Forest outputs. The Forest provides direct revenue to local counties since 25 percent of total Forest receipts are returned to the counties for roads and schools.

B. PHYSICAL, BIOLOGICAL, SOCIAL AND ECONOMIC SETTING

1. Physical and Biological Setting - Landscapes and landforms in the Clearwater National Forest are characterized by rugged, mountainous terrain with v-shaped canyons, steep slopes, and narrow ridges. Generally, landforms in the Forest have resulted from four broad landforming processes: (1) erosion, usually by water, (2) rejuvenation (uplifting of lands followed by downcutting of streams) resulting in overly steep, unstable lands, (3) glaciation, (4) post glaciation modifications (especially water erosion), and slumping or mass wasting.

Land adjacent to the Forest on the north, east, and south are rugged mountains with similar landforms and climate. Land to the west of the Forest consists of basalt flows of the Columbia River Plateau and is drier. Original vegetation was steppe-like-grasslands, but most of this area is now under cultivation.

The Clearwater Forest is classified into three broad vegetative ecosystems: [1/]

Spruce-fir - Located generally at elevations above 5,000 feet along the major ridges and high country of the Forest. It also extends to the east

[1/] Based on Kuchler's Potential Natural Vegetation Classification System 1966, modified by Regional and Clearwater Forest personnel for the Roadless Area Review and Evaluation (RARE II) 1979.

in a relatively narrow band along the high mountainous divide country bordering the Lolo and Bitterroot Forests in Montana and to the north into the St. Joe Forest.

Western ponderosa pine - Found only in the Palouse District primarily over the western portion of the District.

Cedar-hemlock-white pine - Found within the remaining area of the Forest generally at elevations below 5,000 feet in corridors along the Lochsa and North Fork Clearwater River systems and all other major tributaries. Exclusive of the Selway-Bitterroot Wilderness, approximately 70 percent of the Forest falls within this ecosystem.

Within these three broad ecosystems a wide variety of seral and climax-type vegetation exists. This supports a rich and varied wildlife community.

Natural vegetative succession has been significantly altered because of widespread catastrophic wildfires over large areas of the Forest in the late 1800's and early 1900's, as well as more recent large scale timber harvest in concentrated areas. For example, many of the burned-over areas (some burned two or three times) on south-and west-facing slopes are still in the shrub stage. North-and east-facing slopes are in most cases regenerated and now support young stands of trees.

Many of the shrub-covered slopes, especially at elevations below 4,000 feet, provide excellent winter range for the big-game animals, primarily elk and mule deer and, to a lesser extent, moose. Many of the burned over areas at the higher elevations in the spruce-fir ecosystem support large stands of pure and mixed pole-sized and sawtimber-sized Englemann spruce, mountain hemlock, lodgepole pine, subalpine fir, and, to a lesser extent, grand fir, western larch, Douglas-fir. Minor amounts of western white pine are also found here.

The shrub community within the spruce-fir ecosystem is best represented by beargrass, false huckleberry, thin-leafed huckleberry and at higher elevations by mountain heather, mountain phlox, and grouse whortleberry.

The western ponderosa pine ecosystem in the Palouse District is represented generally by heavily timbered, very productive areas of mostly young, mature stands of grand fir, ponderosa pine, and Douglas-fir.

The cedar-hemlock-white pine ecosystem, being the largest system of the Forest, also supports the greatest variety and abundance of flora and fauna of the three ecosystems. It is the most productive land in the Forest and supports over 90 percent of the past and current timber harvesting program. It is well represented by varying compositions and ages of trees, shrubs, and forbs. Western redcedar, white pine, grand fir, western hemlock (Palouse District only) western larch, and Douglas-fir are predominant. Shrubs such as false huckleberry, ninebark, oceanspray, redstem, and shiny-leafed ceanothus, juneberry, thin-leafed huckleberry, pachistima, and snowberry are common throughout this ecosystem. Interspersed in riparian areas along most streams and seep areas in this ecosystem are red alder, devil's club, lady fern, and birch.

No plants at this time have been classified as threatened or endangered within the boundaries of the Clearwater. There is one plant, Dasynotus daubenmirei, that is on a Federal Watch List meaning the plant occurs in a relatively small area and will require some type of monitoring to ensure that it does not become sensitive, endangered, or threatened. A second plant, Tauschia Tenuissima, which is considered extinct in Washington and very rare in Idaho was recently discovered in two localities in the Palouse District.

In addition, a number of plants have been identified by the Nature Conservancy as meriting special concern; most of these are located along the Lochsa River canyon. See the planning records for a complete list of these plants.

The climate of the Clearwater National Forest is dominated by Pacific maritime air masses and prevailing westerly winds. Annual precipitation varies from 30 inches to over 100 inches along the Bitterroot Divide.

Snow accounts for 40 percent of the annual precipitation at lower elevations to 80 percent at higher elevations. Over 90 percent of the annual precipitation occurs during the fall, winter, and spring months as a result of cyclonic storms in the form of a series of frontal systems moving east. These events typically produce long duration, low-intensity precipitation. Forty percent of the annual precipitation falls during November through January.

The climate during the summer months is influenced by stationary high pressures over the northwest coast. Only nine percent of the annual precipitation falls during this period.

Temperature is variable with average annual temperatures ranging from 47° F at the lower elevations to 30° F at higher elevations. Winter low temperatures of -30° F are not unusual for short periods while summer extremes rarely exceed 100° F.

2. Social and Economic Setting - Although the Clearwater Forest provides resources to the Inland Northwest and the Nation, the six-county area of Clearwater, Idaho, Nez Perce, Lewis and Latah Counties in Idaho and Mineral County in Montana is by far the most heavily dependent upon its resources. Major social and economic resources include timber, water, fish and wildlife, Federal employment, and a wide variety of recreational opportunities.

Communities and counties around the fringe of this area include several counties in Montana to the east; Shoshone County, Idaho to the north; and Asotin County and Pullman and Spokane, Washington to the west. But these areas are not as heavily dependent upon the Clearwater as the six-county area.

a. Population - About 95,000 people live in Clearwater, Idaho, Nez Perce, Lewis, and Latah Counties. Major communities include Lewiston, Orofino, Moscow, Kamiah, Kooskia, Pierce, and Weippe. Lewiston and Moscow are the largest towns with populations of 27,986 and 16,513 respectively.

Mineral County in Montana has grown during the last ten years, but is still sparsely populated with 3050 individuals. Superior is the largest community with a population of 1054. Other smaller communities are St. Regis, Alberton, Saltese, and DeBorgia.

Although the population of the five-county area in Idaho has increased about ten percent through 1980, the projected increase for this decade has slowed to three percent.[1/] This is less than the projected 9.7 percent increase projected for the State of Idaho. Latah County shows the largest increase (eight percent) while the other counties are much less.

Table III-1 shows the Idaho population from 1960 to 1980 and the projected 1987 population.

Table III-1. Population by County within Five-County Area

County	1960	1970	1980	(Projected) 1987	Minorities
Clearwater	8,548	10,871 *	10,390	10,576	182
Idaho	13,542	12,891	14,769	14,882	205
Latah	21,170	24,891	28,749	31,012	778
Lewis	4,423	3,867	4,118	4,065	56
Nez Perce	27,066	30,376	33,220	33,865	1,808
TOTAL	74,749	82,896	91,246	94,400	3,029

* Reflects the construction of Dworshak Dam.

As Table III-1 shows, over ninety-six percent of the population is white. The next largest racial group is Native Americans representing only two percent of the total. The largest group of Native Americans lives in Nez Perce County on the Nez Perce Indian Reservation. The third largest group includes people of Hispanic origin; this group lives throughout the area.

b. Economy - The Clearwater National Forest plays an important role in supporting the economy of the counties mentioned in the previous section. This support is provided through timber supply, recreation, and opportunities for Federal employment and income. An estimated 11 percent of the jobs and 10 percent of the income are a direct or indirect result of measurable outputs of the Forest.

The influence wood products industry has on these counties is pertinent to the economic picture of this region. A demand for lumber not only positively affects the wood product industry, but it also affects support services, retail trade, and service businesses. The wood products are exported outside the area and brings in new money. Thus the industry is influenced by outside forces, such as, national interest rates and housing trends.

Forest receipts come primarily from the sale of timber, with lesser amounts from grazing and special use permits, mineral leases, and campground fees. Twenty-five percent of the gross receipts are returned to state and local governments.

1/ From Annual Planning Information Report, Idaho, FY 1987 by Idaho Department of Employment, Bureau of Research and Analysis, April 1987.

Counties with National Forests lands also receive Federal "in-lieu-of-taxes" payments each year. The counties receiving money from the Clearwater Forest's receipts are Benewah, Clearwater, Idaho, Latah, Lewis, and Shoshone.

Table III-2 shows the Forest receipts, employment, and budget from 1978 to 1986. The reduction in employment levels reflects the cutback in the overall federal workforce mandated by national budget reductions. Even with the cutback, the Forest has made a concentrated effort to hire the Native Americans.

Table III-2. Clearwater Forest Receipts, Employment, Budget

Year	Forest Receipts (MM$)	Employment Work Years	Forest Budget (MM$)
1978	8.062	unavailable	unavailable
1979	13.164	"	11,036.9
1980	6.214	"	11,955.5
1981	9.407	441.7	12,505.6
1982	5.688	432.6	12,195.5
1983	6.938	419.3	11,722.8
1984	7.177	387.4	11,625.3
1985	4.202	370.5	12,077.6
1986	6.000 est.	351.1	12,837.5

Table III-3 shows the 1986 budget allocation for the Forest and reflects the importance of timber to the Forest program even though this has been reduced from past years.

Table III-3. The 1986 Annual Budget Allocations Clearwater National Forest

Activity	Percent of Budget	Amount (MM$)
Timber Management	39	4.998
Road Construction and Maintenance	17	2.223
Fixed costs, including fire and administration	36	4.607
Recreation, wildlife and fish, minerals, soil and water	8	1.0027

The Clearwater also provides a source of income through its attractive setting for recreation. Economically, the counties benefit from visitors spending money for supplies and services. Thirty outfitters provide hunting, fishing, and other services. Three commercial outfitters provide floating services on the Lochsa and Middle Fork of the Clearwater River. Only one commercial recreational establishment, the Lochsa Lodge on U.S. Highway 12, operates on National Forest land.

c. Life Styles - The majority of residents in the six-county area are closely tied to the rural and forested aspects of the area. Although 26 percent of the people are employed directly or indirectly in the wood products industries, use of the outdoors is an important part of many residents' lifestyles. Many use it as their primary source of enjoyment and recreation.

Within all the communities which are directly affected by the Clearwater's management, there are groups of people either formally or informally grouped together who express their views on the management and uses of resources in the Forest. People in these groups have a vested and legitimate interest. They show an interest in being able to maintain their patterns of use in the Forest and to protect the resources they value.

One of these groups is the Native Americans. Although the actual Nez Perce Indian Reservation is located just west of the Forest, the provision for fishing and hunting rights extends throughout the entire Forest. The Forest has the responsibility to protect Tribal treaty rights and the Tribe's freedom to believe, express, and exercise their traditional religions within the Clearwater. This responsibility is re-emphasized in the National Forest Management Act of 1976 and the American Indian Religious Freedom Act of 1978. As expressed by the Nez Perce Tribe, their primary concerns have been protection of sites of cultural and religious importance, and enhancement and perpetuation of fisheries and big-game herds.

Other Tribes interested in the management of the Clearwater are the Bannock-Shoshoni, Coeur d' Alene, and Kootenai-Salish Tribes to the north of the Forest and the Warmspring, Yakima, and Umatilla Tribes to the west. These Tribes are mostly interested in any management that effects fisheries or wildlife.

There is often a conflict between the ways different groups perceive the Forest and its resources and how the resources should be used. There is also often conflict between the user groups and the Forest Service over the way the resources should be managed.

Some of the groups that could be affected and will have different levels of acceptance of various management directions are:

1. Hunting and Fishing Groups, (Wildlife and Fish Organizations) desire management that provides the optimum habitat for wildlife and fish. Many would like more access into the Forest and would be affected by management activities that prevented them from traveling into selected areas known for good hunting and fishing. Still another segment prefers undeveloped areas to hunt and fish. This segment often defines good habitat as being those lands which are undeveloped or managed in-near-natural conditions. Both factions would be affected if areas supporting wildlife or fisheries were developed for other uses and not managed for wildlife or fish habitat.

2. Outfitting Industry is concerned with restrictions which limit their use. Decisions which would change the management of large areas now in-near-natural condition would affect them.

3. Hikers and Cross-Country Skiers want good trails and enough access points to disperse people. A quality experience for some is being in an area which is undeveloped. These Forest users would be affected by clearcuts, multiple roads in one area, and poor trail maintenance.

4. Snowmobilers/ORVs main desire is to keep areas from being restricted from their use. More roads and timber harvest increase their opportunities for use. They would be affected by road closures and wilderness designations.

5. Landowners incorporate the use of the National Forest lands into their own adjacent or intermingled land. They want compatible use, which means - for some - management with the same objectives they have for their land. For others, it means eliminating the effects of Forest management by keeping roads and trails from crossing their land.

6. Preservation Groups want major portions of the unroaded lands reserved as wilderness. Using the presently roaded portions as they are currently managed is generally acceptable to them. They would be affected by further developments of the roadless areas.

7. Woods Products Industry wants the productive timberlands to be available for harvest. They do not like to see what they consider "unnecessary" restrictions placed on timber harvest or high road costs. They would be affected if the amount of timber harvested deviates much from the current level.

8. Grazing Industry wants more land available for livestock grazing. They are affected by restrictions of grazing because of possible conflict with other users and resources. They also desire allotments in easily accessed areas. People in this group comprise a small percentage of the total population who use the Clearwater.

9. Resort and Tourism Industry want to see the qualities protected which attract new tourists and recreationists. Forest management which emphasizes recreation is desired.

10. Mining, Oil/Gas Industries and Prospectors are concerned with land designations and management which would restrict access or put restrictions on or increase the costs of exploration and development of minerals or oil and gas.

11. Recreationists including campers, bikers, berry pickers, sightseers, white-water rafters, and boaters are concerned with access to undeveloped or natural appearing areas. They would be affected if too much timber is harvested, too many livestock allotments are allowed, recreational areas and roads are not maintained, or if roads are closed.

The national zone of influence is not significantly affected to changes in many of the Forest's outputs. For example, a change in timber output would not significantly vary supply or demand on a national scale. However, changes in policy affecting amenity values, such as scenic viewing, water quality, wildlife and fisheries, will continue to draw attention from special interest groups at

the state and national levels. This is evidenced in the past by these interest groups' involvement in issues regarding use of roadless areas and establishment of wilderness.

C. THE CURRENT RESOURCE SITUATION

1. Recreation - The Forest has a range of recreational settings and attractions which provide opportunity for many outdoor activities. The main attractions in the Forest are: big game including elk, moose, deer, mountain lions and bears; several large free flowing rivers; a number of mountain lakes; a diversity of forest vegetation; and significant scenic views which enhance the quality of all recreation.

A total of 131 miles of the Lochsa and Middle Fork of the Clearwater River is classified as a Recreation River under the Wild and Scenic Rivers Act. These rivers and the North Fork of the Clearwater River have opportunities for white water boating. Several commercial outfitters offer guided float trips on these rivers. There is also moderate to heavy use of private rafts and kayaks.

The 44,000 acre Lochsa Face lies adjacent to the Selway-Bitterroot Wilderness, facing the Lochsa River and south of Highway 12. This area was established in 1964 by the Secretary of Agriculture to preserve recreational and scenic qualities.

A portion of the Dworshak Reservoir extends into the Forest three to four miles. The National Forest land adjacent to the reservoir is mostly undeveloped.

About 66 percent of the Forest, including the Selway-Bitterroot Wilderness, is roadless and undeveloped. Several primitive roads bisect or penetrate into the large undeveloped areas, but access is limited. These areas provide opportunities for recreation in primitive or semiprimitive settings. The relatively remote location and expanses of underdeveloped land are an attraction to many Forest visitors. A substantial part of dispersed recreation, an estimated 33 percent of the total recreation, occurs in these areas.

Big-game hunting is a significant activity in the backcountry as it is in the rest of the Forest. Twenty-five to thirty commercial hunter-packer guides provide services in the backcountry. Camping, hiking/backpacking, and horseback riding, much of which is associated with fishing and hunting, are the other dominant activities. About 25 percent of recreation occurring in the Forest is hunting or fishing related.

Most of the 1,732 miles of trails in the Forest are located in the undeveloped areas having primitive or semiprimitive settings. As with roads, trails are located following most major streams and along ridges. The trail system was first constructed during the early 1900's to provide access for fire control. With the transition from horses to motor vehicles, with the construction of a basic road system, and with the advent of air travel, maintenance of the trail system essentially ceased. Some work is performed to clear downed trees and for correction of drainage problems on major trails. Localized erosion problems exist on most trails, and some trails are essentially nonexistent because of vegetative growth, windfall, and erosion.

The Clearwater River basin's considerable snowfall presents opportunity for winter sports, although only the main arterial roads serving communities are maintained for access during the winter months. Designated cross-country ski and snowmobile trails are provided on Highway 12 at Lolo Pass and at Palouse Divide north of Harvard.

Developed facilities include 20 campgrounds with a total of 358 camping units, 4 picnic areas with 83 picnic units, 5 minor interpretive sites, and 2 small visitor information sites.

Total recreation in 1980 was estimated to be 1,052,600 visitor days. Of this, 16 percent (166,200 visitor days) occurred at developed sites, predominantly at campgrounds and picnic areas. Use of developed sites increased about 18 percent between 1969 and 1979, and dispersed recreation increased about 10 percent during the same time.

In the future, both developed and dispersed recreation are expected to increase. Increased use of developed recreation will eventually require additional campgrounds in some areas of the Forest.

2. Wild and Scenic Rivers - The purpose and authority for study of wild and scenic rivers is established in the Wild and Scenic Rivers Act of October 1, 1968, as amended. Under the authority of the Act, the Forest is to identify potential candidates to the Rivers System. As a result, streams in the Forest were analyzed for their eligibility and potential classification in the System.

a. River Eligibility and Potential Classification - To be eligible for inclusion, a river must be free-flowing. It also must possess some outstanding value in the adjacent land area. Examples of such values are scenic, geologic, historic, cultural, ecologic, or fish and wildlife habitat.

The eligible river segments also have been assigned a potential classification of wild, scenic, or recreational. Characteristics of these classifications are:

Wild River Areas - Those rivers or sections of rivers that are free of impoundments, generally accessible only by trail, with the watersheds or shorelines essentially primitive and with the water free of man-caused pollutants.

Scenic River Areas - Those rivers or sections of rivers that are free of impoundments, with shorelines and watersheds still largely primitive, and shorelines largely undeveloped but accessible in places by roads.

Recreational River Areas - Those rivers or sections of rivers that are readily accessible by roads, have some development along their shorelines, and may have some history of impoundment or diversion.

b. Streams Assigned Potential Category - By application of the eligibility and classification criteria, three rivers/streams were identified as eligible. The potential classifications assigned are:

Kelly Creek - Thirty-one miles of the stream located within the Forest are eligible for inclusion in the Wild and Scenic River System. A 19 mile segment has been classified as Wild. Another segment of 12 miles is classified as Recreational. The stream is known for excellent catch-and-release trout fishing. Its scenery is outstanding with large brush fields and young timber (created by fires) and with steep, vertical cliffs adjacent to the stream. Also, visitors are attracted to the land next to the stream because of hiking opportunities.

Cayuse Creek - Thirty-nine miles of this stream located within the Forest are eligible for inclusion in the Wild and Scenic River System. The entire segment has been classified as scenic. Cayuse Creek flows into Kelly Creek and exhibits many of the same characteristics, especially the outstanding cutthroat trout, catch-and-release fishery.

North Fork of the Clearwater River - Sixty miles of this river located within the Forest are eligible for inclusion in the Wild and Scenic Rivers System. This entire segment has been classified as Recreation. This river has outstanding scenery and provides an excellent trout fishery. Camping and fishing activities attract large numbers of visitors.

The eligibility and classification determination do not change by alternatives. It is not anticipated that these determinations will have any effect on the present environment. A separate suitability study will be completed for each eligible river segment or Forest group of eligible river segments at a later date. New Forest standards were developed to protect these rivers until such time these studies are completed. An assessment and eligibility for the Little North Fork of the Clearwater River was not made by the Forest during the planning process because only 4 to 5 miles of one bank is adjacent to the Forest land. A small-scale map of each stream is found in the Forest Plan Appendix M.

3. Visual - The Clearwater's landscape has been created by man and nature. Approximately one-third of the Forest's vegetation has been modified by management activities, primarily through timber harvesting and road construction. Roads and harvest areas are generally at lower elevations or are on terrain that is the most accessible. Although clearcuts exist which are not in character with the natural appearing landscape, some cutting units are unnoticeable. These harvest units are in different stages of regeneration.

In the other two-thirds of the Forest, which is roadless and undeveloped, wildfires and disease have created a mosaic of large brush fields, dense coniferous stands, and extensive snag patches (areas of standing dead trees). These areas are also in different stages of regeneration.

Water occurs in a variety of ways in the Forest: lakes, streams, waterfalls, and rivers. Primary travel routes usually follow the river. Views from these routes generally appear natural. Vegetation around some of the lakes has been changed from its natural condition by overgrazing and by camping activities.

The Forest's landscape also includes slopes with scattered trees, rocky forms, and meadows.

Eventually, half of the Clearwater's landscape over many areas of the Forest will change to one that is dominated more by man's activities than by nature's processes. This will happen as roads are constructed into undeveloped areas and as timber management activities change the age and pattern of timber stands.

4. Cultural Resources - Cultural resources are the physical evidence of our heritage. They are significant for the knowledge they contain and for their association with important social values. With the exception of the Palouse Ranger District, most of what is now the Clearwater National Forest was prehistorically occupied by the Nez Perce Indians. The Spokane and Coeur d' Alene Tribes to the north, the Flathead to the east, and the Shoshoni to the south ventured into the border regions of the Clearwater. The Nez Perce Tribe frequented the Palouse District along with the Palouse Indians. "Native American habitation of the Clearwater area has been shown to date as early as 10,000 years ago with occupation occurring in the canyon, plateau, and montane zones."(Ames 1980:75)

Cultural studies of the Clearwater generally center upon the Lolo Trail corridor which extends across the Bitterroot Range from near Lolo, Montana, to the Weippe Prairie at Weippe, Idaho. Originally a Nez Perce Trail which provided access over the mountains to the buffalo hunting grounds in Montana, it served as the main travel route for many years. Captains Lewis and Clark followed it in 1805 and 1806 as did many others.

In 1860 the discovery of gold in the Clearwater River Drainage brought the Lolo Trail the heaviest use in historic times. The 1860 rush to the Pierce area saw a flood of prospectors who explored most major streams in the Clearwater Drainage. In 1862 gold was discovered in what is now the North Fork Ranger District and the short-lived town, Moose City, sprang up. The 1858 Montana gold rush inspired the merchants of Lewiston to propose a wagon road across the Lolo Trail so they might compete in the lucrative supply trade for the Montana gold fields. In 1866 the road construction began, but due to the steep terrain only an improved trail resulted and the dreams of the Lewiston merchants were not realized. The Lolo, and what became known as the Nee-Me-Poo Trail, gained prominence in 1877 during the Nez Perce War. The Nez Perce Indians guided by Chief Joseph, Looking Glass, and others were pursued by General Howard and the U.S. cavalry as they crossed the Bitterroots into Montana.

Activities in the Clearwater after 1877 centered principally on homesteading, trapping, and timber. Logging activities began in the Palouse area around 1889 while they began in the Clearwater area around 1920. The Clearwater National Forest was an offspring of the old Bitterroot Reserve which was proclaimed in 1897 by President Grover Cleveland. In 1908 the Clearwater Forest was established and included all the present forest except the Palouse District, and all of the old Selway Forest. By 1973 the Clearwater Forest acquired its present boundaries.

By 1983, 71,657 acres of the Clearwater Forest had been inventoried for cultural resources. Findings included 518 historic sites and 132 prehistoric sites.

As of 1984 the following sites are listed on the National Register of Historic Places: Musselshell Camas Grounds; the Lolo Trail (the Nee-Me-Poo and Lewis and Clark National Historic Trail); Lolo Pass; Lochsa Historical Ranger Station;

and the Moore Gulch Chinese Mining Site. In addition, Musselshell Meadows, Lolo Pass, and the Lolo Trail are included as part of the Nez Perce National Historic Park through a cooperative agreement with the Forest.

The Lolo Trail is designated a National Historic Landmark. Two outfitters currently offer commercial pack trips along the trail.

Interest in cultural resources is expected to increase, although to what degree is unknown.

5. Wilderness, Roadless Areas, and Special Areas - Of the total 1,837,116 acres within the Clearwater Forest, 66 percent or 1,209,476 acres are undeveloped. Of the total undeveloped area, 950,311 acres are inventoried as roadless and 259,165 acres are classified as part of the Selway-Bitterroot Wilderness. Included within the inventoried roadless area are 19,613 acres of the 25,540 acres classified Middle Fork-Lochsa Recreation River and the entire 1,281 acres of the administratively designated Lochsa Research Natural Area.

Table III-4 shows the acreages of all of these areas. In addition, the table shows the acreages of contiguous areas occurring on adjacent National Forests. The entire roadless area is considered as one area, even if it falls within two or more Forests. Additional detail and analysis of the roadless noncontiguous and contiguous areas are described in Appendix C.

a. Roadless Areas - An inventory completed in 1983 lists sixteen individual roadless areas totaling 950,311 acres in the Clearwater Forest and 309,042 acres of contiguous areas within the Lolo, Idaho Panhandle, Nez Perce, and Bitterroot National Forests. Table II-1 in Chapter 2 and Table III-4 on the following page show the acreage and relationship of these areas to each other.

As currently inventoried each area qualifies for wilderness, although because of size, shape and other factors, some area are obviously more suited to wilderness management than others. Most of the other resources are also represented in each area to one degree or another. (See Appendix C for a more complete description of the resources within each area.)

Table III-4. Wilderness, Roadless, Special Areas

Current Land Status	Acres		
	Clearwater	Other	Total
Selway-Bitterroot Wilderness	259,165		
Middle Fork-Lochsa-Selway Wild and Scenic River System	25,540	25,288	50,828
Lochsa Research Natural Area	1,281	------	1,281
Mallard-Larkins	132,746	126,532	259,278
Hoodoo	149,147	98,500	247,647
Meadow Creek-Upper North Fork	40,702	13,300	54,002
Siwash	8,851		
Pot Mountain	49,792		
Moose Mountain	21,393		
Bighorn-Weitas	235,510		
North Lochsa Slope	113,662		
Weir-Post Office Creek	22,605		
N.F. Spruce-White Sands	33,454		
Lochsa Face	73,027		
Eldorado Creek	7,878		
Rawhide	4,400		
Sneakfoot Meadows	22,334		
Lolo Creek	100	14660	14760
Rackliff-Gedney	34,710	55,359	90069
TOTAL	1,236,297	333,639	717,865

Table III-5 lists all of the roadless areas showing net acres and a summary (by acres) of key or selected resource values. Appendix C provides additional information on all resources. Table III-6 lists the roadless areas and gives a rief summary of each area's wilderness' characteristics and the public interest shown toward each area.

Table III-5. * Resource Information By Roadless Area

Roadless Area	Net Acres	Acres			
		Tentative Suitable Timber	Key Elk Winter	Mineral ** Potential	Fish Streams
01300 Mallard-Larkins	259,278	174,169	40,578	13,640	1,088
Clearwater	132,746	95,134	27,394	8,520	898
Idaho Panhandle	126,532	79,035	13,184	5,120	190
01301 Hoodoo	247,647	153,066	3,263	43,095	345
Clearwater	149,147	98,783	1,450	8,320	345
Lolo	98,500	54,283	1,813	34,775	0
01302 Meadow Creek-Upper North Fork	54,002	36,217	0	34,720	215
Clearwater	40,702	33,089	0	27,520	215
Idaho Panhandle	6,100	1,615	0	0	0
Lolo	7,200	1,513	0	7,200	0
01303 Siwash	8,851	7,549	2,480	6,291	36
01304 Pot Mountain	49,792	47,116	14,720	12,800	200
01305 Moose Mountain	21,393	6,236	490	21,393	93
01306 Bighorn-Weitas	235,510	216,795	18,052	56,320	1,027
01307 N. Lochsa Slope	113,662	111,756	18,446	7,040	720
01308 Weir-Post Office	22,605	19,929	2,034	0	89
01309 N.F. Spruce-White Sand	33,454	32,082	267	1,280	164
01311 Lochsa Face	73,027	34,295	4,528	0	683
01312 Eldorado Creek	7,878	7,878	0	7,878	9
01313 Rawhide	4,400	3,300	0	640	25
X1314 Sneakfoot Meadows	22,334	19,814	0	640	136
01805 Lolo Creek	15,347	10,317	0	15,347	5
Clearwater	100	0	0	100	0
Lolo	14,660	10,154	0	14,660	4
Bitterroot	587	163	0	587	1
01841 Rackliff-Gedney	90,173	79,272	13,048	34,710	347
Clearwater	34,710	30,112	13,048	34,710	301
Nez Perce	55,463	49,160	0	0	46
TOTAL		774,185			

* There is no suitable permanent range within roadless areas.
** Mineral potential, moderate to very high only.

Table III-6. Roadless Areas Attributes

ROADLESS AREAS	WILDERNESS ATTRIBUTES	PUBLIC INTEREST
01300 Mallard-Larkins	Although there are numerous intrusions mostly from dead-end logging, lookout, and mining roads, the large size of the area effectively negates most of these effects. Supports a large herd of mtn. goats. Pioneer Area and St. Joe Wild & Scenic River cover 37,300 acres. These special areas were set aside for their outstanding scenic, roadless, and primitive recreational settings.	High degree of interest by conservation & wilderness groups for wilderness classification. Support for timber by industry strengthened between draft and final.
01301 Hoodoo	The vastness of the area & rectangular shape provides an excellent opportunity for solitude except for a few popular lakes and trails. Most impacts have rehabilitated naturally. Boundaries are fairly well defined by natural features.	High degree of interest by conservation & wilderness groups for wilderness classification.
01302 Meadow Creek-Upper North Fork	Because of the relative uniform rectangular shape, external effects are minimal. Has low standard roads, private ownership, high, unaltered alpine country, and a display of successful vegetative changes from the 1910 fire.	A survey taken during RARE II supported development, but local & regional interest has been expressed for wilderness.
01303 Siwash	The area has no unnatural or adverse impacts to integrity. Solitude is minimal because of the small size, & noise from logging activities on two sides and traffic of the main river road.	No interest has been expressed to designate this area as wilderness.
01304 Pot Mountain	The varied habitat types and stages of succession, and scenic mountainous terrain are key wilderness features. There is very minor disturbance to the natural integrity. Solitude is good in most of the area, although adjacent developed portions of the Forest can easily be seen as background in many places.	No interest has been expressed to designate this area as wilderness. There is some interest in leaving it roadless.

(Table III-6 cont.) Roadless Areas Attributes

ROADLESS AREAS	WILDERNESS ATTRIBUTES	PUBLIC INTEREST
01305 Moose Mountain	Key wilderness features are varieties of habitat types, stages of vegetative succession, & challenges to hikers. Solitude is poor in most of the area. Scenic viewing is poor because of the altitude and small size of the area.	Little interest has been expressed from conservationists or developers.
01306 Big Horn-Weitas	The natural integrity and appearance have not been altered. The size & shape promote solitude. No single attraction congregates people. Many significant historic sites. Cayuse Creek supports quality trout fishery. Gray wolf sighted. Supports large elk herd. Private ownership within boundary. Timber is scattered.	Most interest in preserving the elk and fisheries, mainly through leaving portions of the area roadless. Considerable interest within certain groups in recommending Toboggan and part of Cayuse for wilderness, since 1985.
01307 North Lochsa Slope	Some evidences of man are noticeable, but they are minor. Solitude ranges from poor to good depending on location. Fish Creek drainage provides most solitude. It also attracts the most interest because of wildlife and fish.	Much interest in conserving Fish Creek/Hungery Creek area.
01308 Weir-Post Office Creek	Small size affects solitude & silence. Few evidences of man. Most significant feature is the Lolo Trail. Fishing is available at Indian Post Office Lake.	No public concern for wilderness, but some interest in leaving roadless for wildlife purposes.
01309 North Fork Spruce-White Sand	Natural integrity is not affected except by two major roads and trails. Solitude is attainable except at popular lakes and streams. Adjacent to Selway-Bitterroot Wilderness. 3500 acres have been isolated by the Elk Summit dead-end road. 32,082 acres of land are suitable for timber.	Strong interest in wilderness except for the Savage Ridge portion.

(Table III-6 cont.) Roadless Areas Attributes

ROADLESS AREAS	WILDERNESS ATTRIBUTES	PUBLIC INTEREST
01311 Lochsa Face	Adjacent to Selway-Bitterroot Wilderness. Overall area appears undisturbed. Many scenic views of steep, rocky cliffs. Hot springs provide the heaviest concentration of recreationists in the Forest. Presents a good example of successional stage of vegetation resulting from past fires. Large moose and elk populations. Streams provide rearing and spawning habitat for trout. High timber values on 61,968 acres of suitable timberland are difficult to access. Includes the Lochsa Face Secretary's Area.	been shown for the entire area. Most wilderness interest is east of Tom Beal Road. Some wilderness interest east of Queen Creek. Favored nonwilderness west of Warm Springs Creek. Some interest for timber development from Tom Beal road to Mocus Creek.
01312 Eldorado Creek	Solitude is virtually nonexistent because of the small size. There is no logical way to adjust boundaries to make it manageable to wilderness.	No public interest has been expressed.
01313 Rawhide	Solitude is impossible because of external sights and sounds. If the area was added to the Meadow Creek-Upper North Fork Roadless Area, size would not be a problem. Private land within boundaries is being logged.	Very little interest has been expressed to make area into wilderness.
X1314 Sneakfoot Meadows	The area appears similar to Selway-Bitterroot Wilderness. Solitude is good in most of the area. Supports a large population of moose. Has several meadows. Streams have important fishery habitat. Sneakfoot Meadows has been proposed as a Research Natural Area.	Strong interest in wilderness as addition to Selway-Bitterroot Wilderness. Interest in preserving Sneakfoot Meadows.
01805 Lolo Creek	There is not an outstanding opportunity for solitude due to moderate to heavy visitation, frequent air traffic and noise from nearby areas. Can see towns and Highway 12 in the background. Is adjacent to the Selway-Bitterroot Wilderness.	Interest in developing a ski area & mineral sites mostly on Lolo F. Some interest in developing electronic site.

(Table III-6 cont.) Roadless Areas Attributes

ROADLESS AREAS	WILDERNESS ATTRIBUTES	PUBLIC INTEREST
01841 Rackliff-Gedney	Opportunities for solitude vary throughout the area. Is adjacent to Selway-Bitterroot Wilderness. Approximately 15 percent of the area has been impacted by development. Has important winter range. Has a major elk-calving site. Has a National Recreation Trail. Part of a Natural Research Area is located within the unit.	Interest expressed by Idaho Fish and Game and U.S. Fish and Wildlife Service in keeping it roadless. Inland Forest Council has suggested that timber harvest is compatible.

The roadless areas will continue to generate interest in the coming years.

b. **Selway-Bitterroot Wilderness** - The 259,165 acres of wilderness within the Clearwater Forest is just a small portion (19 percent) of the entire wilderness which totals 1,337,910 acres. Other contiguous portions are located on the Lolo (7,557 acres), Bitterroot (511,6567 acres), and the Nez Perce (559,531 acres) Forests. Although there is a comprehensive wilderness management guide, each Forest manages its own portion separately.

Most of the Selway-Bitterroot Wilderness lies within the Idaho Batholith which is characterized by a predominance of coarse-grained granitics. These coarse-textured soils have weak structures and are highly susceptible to erosion. The coarse texture is an asset as long as it is covered with vegetation and concentrations of water are prevented. Generally, it has high infiltration and a high compaction resistance.

The past wildfires in the Selway-Bitterroot have created large brush fields, lodgepole pine types, and extensive snag patches in some areas. Almost two-thirds of the wilderness was burned in the period 1870-1934. Many areas burned more than once during this period. Several fires started outside the wilderness then burned through it.

The extensive brush fields provide browse for a large elk herd. These brush fields are progressively growing out of reach and are being replaced by conifers through natural succession. This situation has subsequently reduced browse, and the elk population has declined.

Water quantity and quality originating within the wilderness is important to downstream users. At least three million acre feet of water flow each year from the entire wilderness area. The major rivers and streams run free and clear, but intense short duration storms cause erosion in the streams. All streams are cloudy during spring runoff.

Vegetation and soil of the shore area around many of the high mountainous lakes have been modified. Evidence of change includes overgrazing, soil compaction and erosion, trampling and loss of vegetation, scarring of trees, and littering.

A large infestation of spruce budworm has been working its way over the entire wilderness. Large drainages have been infested, but based on visual observation and air detection, the infestation seems to be static at this time.

Aside from the Selway River corridor in the Nez Perce National Forest, most of the interior receives light use. Cross-country travel is difficult because of vegetation and topography. The northern portion of the area along the east slopes of the Bitterroot Range receives day-and-weekend use because of its proximity to populated areas.

Fishing is an important wilderness recreation. Native cutthroat trout in streams and lakes provide good fishing. Some high mountainous lakes have marginal fish habitat. Many have been planted by Fish and Game Departments utilizing pack stock or aircraft. Species planted include cutthroat, rainbow, California golden, eastern brook trout, and grayling. Fishing is improving in areas where a catch-and-release policy has been established.

Although the present trail system was planned for fire detection, control, and administration, some trails have been constructed by outfitters to gain access to hunting areas. Many of the trails have gradients exceeding 40 to 50 percent. Some of the steep sections have eroded to bare slab rock. Windfalls and heavy brush are also common on these trails.

Trail bridges are necessary to meet minimum needs of visitors and administrative traffic. Many bridges are constructed of native materials. Access roads to the wilderness boundary are adequate during the drier portions of the use-period. During the fall, roads such as Coolwater (#317) become practically impassable. Because of the use they receive, they require more than normal maintenance each summer.

Wilderness use is expected to increase.

c. Special Areas - The two areas classified as "special" are:

Middle Fork-Lochsa Recreation River - This classified river system is a part of a larger wild and scenic river system established by Congress under the Wild and Scenic Rivers Act of 1968. The system in the Clearwater Forest includes two rivers: the Middle Fork of the Clearwater River from Kooskia upstream to its junction with the Selway and Lochsa Rivers at Lowell; and then the Lochsa River from Lowell upstream to the Powell Ranger Station. This totals approximately 93 miles.

The primary purpose of the classification is to protect the free flowing nature of the river systems. Under a management plan prepared in the 1970's, the systems, which include a corridor of land approximately 1/4 mile in width along the rivers, are to be managed to "protect aesthetic, scenic, historic, fish and wildlife and other values that will contribute to public use and enjoyment of this free flowing river and its immediate environment." (USFS, "River Plan

Middle Fork of the Clearwater including the Lochsa & Selway," Bitterroot, Clearwater, Nez Perce Forests, p.4.)

Of the 25,540 acres within the Clearwater portion of the Recreation River corridor, 1,934 acres are within the Selway-Bitterroot Wilderness, and 19,613 acres are part of four separate roadless areas.

Lochsa Research Natural Area - This 1,281 acre area is currently the only existing research natural area in the Forest. It is roadless and is located partly within the Middle Fork-Lochsa Recreation River corridor. As the name states it is managed for its research value of the coastal disjunct species, primarily flowering dogwood. To protect these values, developments and activities such as timber cutting or wildlife browse burning are not permitted.

Nine more areas totaling 9,636 acres are being proposed for research natural areas in this document.

Other special areas include administrating designated sites of unique botanical, geological, and historical significance. These include such sites as Mussellshell Camas, Devoto Grove, Heritage Grove, Giant White Pine, Giant Western Red Cedar, Morris Creek Fossil beds, etc.

6. Wildlife and Fish

a. Wildlife

(1) General - The topography, geology, and climate of the Clearwater have combined to create a diversity of wildlife habitats. The relatively wet climate creates a range of riparian habitats from high marshy meadows and small headwater streams to large river drainages. The Forest is highly productive of vegetation of all types. This productivity, combined with past fire history and topography, has resulted in habitat diversity that directly influences wildlife abundance and variety.

Of all the wildlife species of the Clearwater, elk have been by far the most important and of greatest concern from both a public and agency perspective. Prior to 1910, elk were relatively scarce. Catastrophic wildfires of 1910 through 1934 created extensive forage areas. Elk numbers then increased rapidly until the late 1940's and early 1950's when a peak of about 40,000 animals was reached. A steady decline in population continued until it stabilized in 1975. Since then the numbers have increased about 10 percent per year to the present estimated population of 15,000. About 1,000 elk are harvested annually.

Relatively little is known in regard to abundance or distribution of the moose. It is estimated that the present population is 500 with an average annual harvest of 12. During the summer, moose prefer high mountain, wet riparian areas and lakes. During winter some move to brush fields at lower elevations or seek shelter and food under a conifer canopy.

High elevation breaklands are the preferred habitat of Rocky Mountain Goats. The Forest supports an estimated 300 goats, but declines in recent years have brought stricter harvest regulations.

White-tailed deer can be found throughout much of the Forest during the summer season with the higher concentrations in the Palouse District and west side of the Lochsa District. Concentrations of deer can be observed at lower elevations during the winter. Mule deer exist in lesser numbers on open shrub breaklands at higher elevations. Both deer population levels seem to be stable at an estimated 5,000 white-tailed deer and 600 mule deer.

Mountain lions and black bears occupy a wide variety of habitats. In some areas the black bears have been connected with elk calf mortality and are presently managed under liberal seasons and bag limits. At present the population is estimated to be 1,200 bears and 100 mountain lions.

An abundance of small mammals and bird species populate the Forest and contribute to the overall wildlife resource.

Changes in wildlife habitat conditions created by management activities, although not abrupt, will occur with time. Browse production will increase at least temporarily on winter range burnt or harvested for timber. Opportunities for big-game hunting in roadless areas will decrease as some areas become developed. On the other hand, opportunities for hunting in developed areas will increase. Riparian habitat conditions will not change noticeably.

(2) **Wildlife Indicator Species** - The Clearwater National Forest supports over 350 different species of wildlife. Since the number of species precludes special considerations of each one, wildlife species were grouped according to their similar biological requirements. One or more species for each group was selected to represent the others within the group. These were called "indicator species." A complete list of the Clearwater indicator species and why they were selected follows. The threatened and endangered species are described in (c) of this section.

- Elk

Elk are one of the main issues that was identified through public involvement. They are a priority big-game species of Idaho Fish and Game, and hunting elk provides a significant economic factor in the State's economy. Elk are a general forest seral species easily affected by management activities. During the winter elk need openings with browse that are relatively close to timber cover. During the summer they need a mosaic of openings and cover types that are generally found at the headwaters of drainages.

- Moose

Moose are a very unique big-game species that can be found in relatively low numbers scattered throughout the Forest with the exception of the Powell District. The Powell area is recognized as having one of Idaho's largest concentrations of moose. Moose are partially dependent during winter on mature timber that have an understory stand of conifers and/or pacific yew.

- White-Tailed Deer

White-tailed deer are the primary big-game species of the Palouse District, so white-tails will replace elk as the indicator species on that District. They are dependent on good interspersion of cover and forage and on mature and old-growth stands for wintering areas.

- Pileated Woodpecker

Pileated woodpeckers are the largest primary excavator. They make their nests in large snags. Although past fires have left a temporary abundance of snags in the Clearwater, standard logging practice is to cut these snags. As more of the Forest comes under timber management, available and suitable nest trees may be severely reduced. Pileated woodpeckers are also generally regarded as old-growth indicators because of their dependence on large, old snags for nesting and downed logs for feeding.

- Goshawk

Goshawks are proposed as indicators of old-growth habitats. Goshawks prefer multi-layered, mature, old-growth stands of about 30 acres, and northern aspects for nesting. Despite their preference for nesting in old-growth stands, goshawks feed largely on several species; thus, they are more dependent on old-growth stands that have a high degree of diversity. Goshawks are at the tip of the food chain and thus a good indicator of ecosystem health. Goshawks are common and territorial. Viable populations are dependent on maintaining a good prey base and a well dispersed supply of suitable nesting sites. Dispersion of old-growth habitats throughout the Forest is important to maintain this species.

- Pine Marten

Martens, small "weasel-like animals, are dependent on mid-to-high elevation, mature forests. They require some canopy cover and will avoid large openings. Consequently, they are susceptible to management activities. Marten are also a predator and high on the food chain. Predators are good indicators of ecosystem health.

- Belted King Fisher

This bird species is dependent upon riparian habitat. Management activities such as logging and road construction in these areas may have an impact on this species.

b. Fish

(1) General - The Clearwater contains some of the most significant and valuable fishery resources in the region. Several of its westslope cutthroat trout streams like Kelly Creek and Cayuse Creek are ranked high nationally. The Forest is noted for providing a substantial amount of high quality spawning and rearing habitats for a variety of salmonid fisheries especially steelhead trout and chinook salmon.

The massive hydroelectric development of the Columbia and Snake Rivers and the major tributaries has been costly to fish resources. In 1927 a dam built near Lewiston, Idaho, virtually eliminated the run of spring chinook salmon in the Clearwater drainage. In the early 1970's, Dworshak Dam on the North Fork of the Clearwater River eliminated 60 percent of the Forest's highest quality habitat for steelhead trout. Fish destined for Idaho or the ocean had to negotiate eight dams to return to their spawning beds. By the mid-1970's, Idaho stocks of anadromous fish were on the brink of extinction.

Since that time, accelerated efforts of mitigation and restoration have indicated that the prognosis for steelhead is improving, but uncertainty remains for the salmon. If downstream problems are adequately resolved, Idaho stocks of

salmon and steelhead are capable of responding to desirable population levels primarily in the remaining high quality habitats of National Forest watersheds.

Several major fish streams in the Kelly Creek District, now called the North Fork District (North Fork Clearwater, Lake Creek) and Powell District (Upper Lochsa, Brushy Fork, Crooked Fork) are located within intermingled private ownership. Because of heavy timber harvesting and road construction in these areas, the quality of water and stream habitat has been severely impaired a number of times over the past twenty years. Fortunately, because of relatively large volumes of fast flowing water, especially in the North Fork and Lochsa Rivers, the quality of the watershed and fish habitat tends to recover quickly.

The intermingled ownership in the Palouse District poses a different set of water and fish habitat problems. Most streams are lower gradient, and do not flush out sediment quickly. As of result of past road construction and timber harvesting on private as well as National Forest lands, many of the major fishery streams have been heavily impacted. In addition to timber harvesting, many of the intermingled landowners farm the more gentle lands. Without adequate erosion control, a considerable amount of sediment has moved into area streams.

As better watershed analysis techniques have been developed in recent years and as management practices have continued to improve on National Forest lands, soil loss becomes less of a problem. But there are no specific standards and/or controls on private lands, and many timber management and farming practices have not changed appreciably over the years. As a result most major fishery streams in the Palouse District remain at very low fish-producing levels.

Whether or not a continuation of improved management practices on National Forest lands will improve or even stabilize the water quality and fish habitat in the Forest remains to be seen, but interest in improving fishery conditions will continue to increase.

The Forest has 364 significant fisheries streams that total 5,018 miles. Of this total, 714 miles support anadromous fisheries (salmon and steelhead) and 4,304 miles sustain a nonanadromous fishery consisting primarily of cutthroat trout.

The Clearwater also contains 171 subalpine lakes ranging in size from less than an acre to the 117 acre Fish Lake near the Montana Divide. Total surface area of the lakes is 1,909 acres. Yellowstone cutthroat trout (Salmo clarki bouvieri) is the predominant species of the lake fisheries.

The Forest provides a total of 2,483 acres of spawning, rearing, and migratory habitats for the two anadromous species. Of this total, 113 acres consists of spawning habitat, and 1,270 acres consists of rearing and holding habitats (pools). Only 12 percent (292 acres) of the total habitat acreage is located within the Selway-Bitterroot Wilderness area. Table III-7 displays this habitat by district and wilderness area.

Table III-7. Total Anadromous Fish Rearing Habitat by Districts and Wilderness Area

District	Miles	Habitat (acres)	Wilderness (acres)
Pierce	107	100	-0-
Palouse	9	24	-0-
Lochsa	303	1356	27
Powell	295	1003	265

The total amount of nonanadromous fish habitat equals 4,554 acres with 1,970 acres consisting of pool-run habitat types. The habitat by District is presented in Table III-8.

Table III-8. Total Rearing Habitat by Districts for Nonanadromous Fish Species

District	Miles	Total Rearing Habitat (acres)
Pierce	702	496
Palouse	114	131
North Fork	2023	3130
Lochsa	809	224
Powell	656	573

In the Clearwater Basin of north-central Idaho, the focus of management and social and economic interest can be primarily narrowed to three species: Redband (rainbow) - steelhead trout (Salmo newberryi) (Behnke); spring chinook salmon (Oncorhynchus tshawytscha); and westslope cutthroat trout (Salmo clarki lewisi). These species, especially spring chinook salmon and westslope cutthroat trout, have relatively narrow habitat requirements and preferences. Steelhead trout and chinook salmon have been traditionally fished for as target species in recreation, commercial, and Indian subsistence fisheries.

The westslope cutthroat trout is the primary nonanadromous species in the Forest. It occurs in every major stream system and supports extensive catch-and-release or harvest recreational fisheries.

(2) **Fish Indicator Species** - The following fish have been identified as management indicators species of the Clearwater Forest.

- Steelhead Trout

During the period from 1974 to 1980, wild steelhead escapement averaged 3,866; this is 53 percent of full carrying capacity. During the period from 1971 to 1980, the escapement for wild steelhead averaged 6,208 or 85 percent of full carrying capacity. In 1982, wild escapement returned at a rate that fully seeded all the available habitat in the Clearwater Basin - 7,529 fish.

Population estimates for steelhead trout are presented in Table III-9. The difference between maximum and baseline potential is related to the existing level of habitat quality. Past development activities have reduced habitat for steelhead by 13 percent.

Table III-9. Population Estimates and Habitat Potentials for Steelhead Trout Smolts by Districts

District	Existing * Population Level	Baseline Habitat Potential	Biological Habitat Potential
Pierce	28,300	20,495	27,450
Palouse	2,360	6,180	10,490
Lochsa	47,960	58,970	65,640
Powell	52,770	166,400	184,790
Forest Summary	131,390	252,045	288,370
Percent of Biological Habitat Potential	46	87	

* Existing situation covers the period from 1975 to 1980.

- Spring Chinook Salmon

During the period from 1970 to 1980, escapement of chinook salmon to the Clearwater Basin has averaged 2,279 fish or 17 percent of full carrying capacity. To fully stock all Forest rearing habitat and compensate for low survival, a spawning escapement of 13,368 salmon need to return to the Clearwater Basin.

Population estimates for chinook salmon are presented in Table III-10. Population trend data suggest that Clearwater salmon stocks are unable to replace themselves under present environmental conditions (downstream mortality factors) without substantial supplemental stocking. The population is in an extremely vulnerable situation. Past development activities have reduced salmon habitat by 25 percent.

Table III-10. Population Estimates and Habitat Potentials for Chinook Salmon Smolts by Districts

District	Existing * Population Level	Baseline Habitat Potential	Biological Habitat Potential
Pierce	3,940	26,130	51,550
Lochsa	2,130	30,130	46,140
Powell	60,750	263,270	331,510
Forest Summary	66,820	319,530	429,200
Percent of Biological Habitat Potential	16	75	

* Existing situation covers the period from 1975 to 1980.

- Westslope Cutthroat Trout (Catchable Trout)

Population estimates for catchable westslope cutthroat trout (greater than 6 inches; 152mm) are presented in Table III-11. The difference between maximum and baseline potential relates to the quality of habitat and to the effects of increased fishing via increased access. Minimum viable populations are also displayed and are based on the cutthroat's high annual mortality rates, slow growth and maturation, and extreme vulnerability. The high minimum viable would provide a harvestable surplus, a limited consumptive fishery, and an extensive catch-and-release fishery. The low figure would allow for stock replacement plus limited catch-and-release fisheries. It must be kept in mind that westslope cutthroat trout in Clearwater streams mature at 6 years of age and approximately 12 inches in length. Only a small proportion (15-20 percent) of the total age structure in large systems reaches or exceeds 12 inches in length.

Table III-11. Population Levels of Catchable Trout (greater than 152mm) in Streams by Districts

District	Baseline Habitat Potential	Biological Habitat Potential	Minimum Viable Max.	Min.
Pierce	46,075	62,610	39,165	32,250
Palouse	6,160	8,250	5,230	4,310
North Fork	249,890	282,825	212,450	174,925
Lochsa	62,200	68,840	52,870	48,190
Powell	159,295	175,910	135,400	123,140
Forest Summary	523,620	598,435	445,070	382,815
Percent of Biological Habitat Potential	88		74	64

The Forest provides 13 percent of the total State habitat for westslope cutthroat trout and will play an integral role in meeting the future demands for the species.

c. Threatened and Endangered Species - The National Forest Management Act (36 CFR 219.19 <A>) requires that threatened and endangered species be considered as management indicator species. Bald Eagles and gray wolves are endangered species in the Clearwater, and grizzly bears are classified as threatened. The Coeur d' Alene salamander and chinook salmon are candidates for the threatened and endangered classification.

- Rocky Mountain Gray Wolf

The Clearwater's T & E species revolves primarily around one species, the Rocky Mountain Gray Wolf. The Forest is recognized as having habitat with a very high potential for recovery of the wolf, and therefore has been assigned a target of providing enough habitat for ten wolves. While there have been numerous wolf sightings over the years, it was not until 1978-81 that actual photographs were taken of single wolves in the Bighorn-Weitas country. A wolf requires approximately 100 square miles of habitat with an adequate prey base to survive. Deer and elk which are found in abundance on the Clearwater provide an ideal prey base. The Forest also has large areas of undeveloped country including wilderness in which harassment is minimal.

- Northern Bald Eagle

The Northern Eagle is another endangered species found in and near the Forest. Currently no nests or commercial roost sites are known to exist in the Forest. Nearly all of the Forest eagle habitat is associated with third and fourth order drainage and corresponding riparian habitat during the winter. Eagles are quite common on the main Clearwater River from Orofino to Kamiah and also at certain times on the North Fork of the Clearwater in the vicinity of Dworshak Dam.

- Grizzly Bear

The grizzly is listed as a threatened species. Historical evidence indicates that grizzly bears once occupied portions of the Clearwater Forest along the Clearwater River and within the Selway-Bitterroot Wilderness. "Observations over the past ten years indicate that a number of scattered individual bears may still occupy the North Fork Clearwater River area and Selway-Bitterroot Wilderness" (Melquist, 1985), (USFWS 1985). Although there have been almost 100 reports concerning grizzlies dating as far back as 1920, none of the reports on file have supportive evidence such as pictures, plaster cast of tracks, scats, hair, etc. The Forest is not recognized as having any occupied grizzly bear habitat.

- Peregrine Falcon

Although considered at one time, it is now believed that the Clearwater has no viable habitat for the threatened peregrine falcon.

- Plants

No plants have been classified as threatened or endangered within the boundaries of the Clearwater. There is one plant, Dasynotus daubenmirei, that is considered as a possible candidate by some plant specialists. It is found on only one general area in the Forest.

7. Range - The range resource is the forage produced for livestock browsing and grazing. Primary range consists of meadows interspersed in forested lands. In some allotments the forest cover has been opened by fire or timber harvest, increasing temporarily the production of browse and forage plants.

The Clearwater currently provides livestock grazing for 16,000 animal unit months (AUM's) on 53 range allotments. This includes 12,000 AUM's of cattle, 3,000 AUM's of horses and 1,000 AUM's of recreational stock.

Remote, steep terrain and poor or nonexistent access along with short seasons makes forage utilization difficult or not economical. The present production of livestock forage is not being utilized due to these reasons. Also, in some situations where livestock grazing has conflicted with elk, the conflict has resulted in relocation of livestock to other areas. Range and recent economic conditions have forced permittees to discontinue use on some of the Forest's more remote and short-season allotments. Requests have been received to find substitute areas more accessible to base operations. The Forest has been able to do this in most cases. It is expected that this trend will continue with the demand for forage on the more accessible portions of the Forest remaining high, while backcountry allotments are designated to other uses.

Little change in the range-forage situation is expected to occur in the next decade. If an increase in demand occurs, opportunities exist to better utilize the livestock forage through more intensive management and by taking advantage of forage created by timber harvest. This would require an increased level of management and funding.

8. Timber - Timber is a key resource of the Clearwater National Forest. Of the 1.8 million net National Forest acres, 1.6 million acres, including classified acres, are capable of producing timber in excess of 20 cubic feet per acre per year. About 700,000 acres produce in excess of 90 cubic feet with many stands producing over 120 cubic feet.

The programed timber harvest was approximately about 170 million board feet (MMBF) annually for the fiscal years 1981 through 1985. Uncut volume under contract as of March 31, 1981, was 502 MMBF and remains at a similar level today.

Based on 1979 production figures, the 27 sawmills located within the zone of influence of the Clearwater Forest produced 1.2 billion board feet of lumber. Sixteen mills have historically been partially dependent on timber from the Clearwater National Forest. In 1979 they produced 638 MMBF of lumber or about one half of the 1.2 billion total. Reduced by an assumed 25 percent overrun, the log scale totals for the 27 mills was 900 MMBF and for the 16 dependent mills 478 MMBF.

The Clearwater National Forest harvested 177 MMBF in 1979 or 37 percent of the needs of the dependent mills and 19 percent of the needs of all mills in the Forest's zone of influence. Private forest land provided 50 percent of the total harvest in 1978 in the Northern Region and, according to the above figures, at least that much in the Clearwater area.

Timber harvest activity has been concentrated on about 40 percent of the Forest's commercial timberland base. Most extensive stands of old-growth timber not burned in the large fires of 1910, 1919, and 1934 have been accessed. Areas not yet developed have young stands with less volume and are more difficult and expensive to reach.

Extensive stands of mature and over-mature lodgepole pine subject to mountain pine beetle attack are located in undeveloped areas. Insects and disease have virtually eliminated white pine from many stands. In 1977 the dead standing and downed white pine was estimated at six billion board feet. Lack of access and markets for the dead wood have affected salvage efforts.

Many areas burned by the large fires have regenerated well. Nonstocked commercial forest land is estimated at 60,000 acres. Reforestation of these acres at current program levels should be completed by the year 2000.

Insect and disease conditions in 1980 were the least damaging for any year since surveys were made. Minor mortality was occurring from the Douglas-fir bark beetle, mountain pine beetle, and pine and fir engraver beetle. Light defoliating damage caused by western budworm and larch casebearer was also noted. A strong pulp market in 1980 helped in removing a significant volume of dead white pine and cull grand fir to local and west coast markets.

An abundance of dead timber will help the Forest respond during and beyond the Plan period to the demand for wood fiber for energy needs. A study in 1981 revealed a supply of about 2.8 million tons of standing and downed dead timber in the Clearwater National Forest. Timber mortality will cause this supply to continue to grow.

The primary demand for this material has been firewood for home use. The Forest has issued over 3,000 firewood permits in each of the past four years. While demand for firewood has steadily increased, especially on Districts closer to population centers, the Forest has been able to meet all demand increases with only minor changes in the firewood program. Changes have been made to make it easier to obtain a permit and to get firewood information from Forest offices.

During periods of high industrial demand for pulpwood, some competition for available supplies of dead material developed, particularly in localized areas. However, demand for all uses continues to be met.

An area where demand could develop, but has not yet, is wood fiber for commercial energy production. Such use is occurring in other parts of the country, and some development has occurred in northern Idaho. However, there have been no firm proposals for wood energy production in the Clearwater area.

In the future, the amount of timber offered for sale will correspond to changes within the wood products industry and local communities. The degree and rate of change will depend on the demand for timber and the private timber supply situation. Under favorable market conditions, increased road construction, logging, and sawmill production with an increase in long-term capital investments for materials and equipment could be expected.

Five recent studies have focused on the costs and revenues of selling timber from the National Forests. These studies were conducted by the Natural Resource Defense Council (1981), the Surveys and Investigations Staff of the House Committee on Appropriations (1984), the Congressional Research Service (1984), the General Accounting Office (1984), and the Wilderness Society (1984). All used a short-term simple approach to analyze an extremely complex issue, and all were critical of timber sales that yielded less revenue than their costs.

Subsequent to these studies, the subcommittee on Interior and Related Agencies of the House Appropriations Committee drafted a bill, H.R. 5973, that would use cash-flow as a test of the timber sale program. To evaluate the effect of a cash-flow test, the Forest Service prepared a "Cash-Flow Analysis of National Forest Timber Sales in Response to H.R. 5973 and Associated Report Language," (1984). The Forest Service assigned a team the task of evaluating the reasons for negative cash-flow in the timber programs on four National Forests. The Clearwater National Forest was one of the four Forests chosen. A review was conducted in 1985, and a report was prepared with specific recommendations for improving cash flow.

The Clearwater National Forest below cost sales study listed reforestation standards, K-V and B-D deposits, roads, dead white pine, sale planning, marketing utilizations, and organization as the primary reasons for negative cash-flow. The specific remedial recommendations have been implemented, and an improvement in the cash-flow was realized. The Clearwater National Forest will continue to implement these recommendations and will continue to develop new techniques to improve the situation.

The Forest Service analysis determines cash-flow on timber sales by subtracting those cash outlays incurred while preparing, selling, administering, regenerating, and improving timber stands for sale from the cash revenue derived from the sale of the timber stands. While many internal variables can contribute/detract to/from the cash-flow issue, the most important variables are the lumber market and the demand for Forest products. These factors control the price paid for National Forest timber sales which in turn control the cash-flow.

The consideration of cash-flow alone is not a sufficient basis for evaluating timber sales under current laws and policies. The level and location of timber harvests are defined in the Forest Plan, which ultimately determines net public benefits (total program benefits compared to total program costs).

The Clearwater National Forest will utilize cash-flow analysis to determine areas for improved management efficiency and will utilize net public benefits analysis to determine the effectiveness of the Forest Plan.

9. Watershed - Among the most important and abundant resources of the Clearwater are water and associated riparian areas. Approximately 116,000 acres in the Forest's land base can be classified as riparian areas. By definition (FSM 2526) this includes water, true riparian zones (characterized by riparian vegetation), wetlands, floodplains, and lands adjacent to streams and lakes.

The riparian areas are extremely valuable due to their functions and products. Some of these are: flood moderation; stream channel and bank stabilization; water temperature control; fish habitat; protection from upslope erosion and water yield; superior timber production; placer mineral deposits; special wildlife habitat; and preferred recreational sites. Riparian areas are usually an integral part of associated upslope or adjacent land area, but their resource values and sensitivities often require special consideration.

The watershed contained within the Forest is a sub-basin of the Snake River System Downstream water supply from the Forest is important to the network of power generation facilities on the Columbia and Snake Rivers and also for water transportation, irrigation, sport and commercial fisheries, and recreation. Local or in-place water supply is important for the Dworshak Reservoir.

Water quantity has not been a major concern, as abundant rain and snowfall have produced adequate flows even in the driest years. There has been no attempt to increase water quantity coming from the Forest, but some management of increased flows is required for stream bed protection.

Water quality is an important issue. Overall, present water quality is excellent; the concern is to maintain that quality.

Watershed is an important part of design in projects involving vegetation manipulation or channel or soil disturbance. Past management, particularly road construction on sensitive landforms, has had an impact on water quality and fish habitat. New practices of road location and construction have significantly reduced such impacts. Rehabilitation of watershed problem areas is taking place as funding becomes available for projects such as repair of landslides, poor culvert installation, road reconstruction and surfacing of landslides, obliteration of unneeded roads, and stream and channel improvement

Temporary increase in sediment will occur in those areas that are being managed for timber, especially where new road construction is planned.

10. Minerals

a. Past Minerals Activity - The Forest has an early-day mining history with the discovery of gold in 1860 near the town of Pierce, which is located at the western edge of the Forest. The Pierce discovery marked the beginning of mining in Idaho. Many prospectors came and prospected over much of the Forest.

Estimated mineral productions were between $5,000,000 and $10,000,000 from 1860 and 1969. Much prospecting and some production were reported in the area around the North Fork of the Clearwater River including sporadic activity around Moose City between 1868 and 1900. The Hoodoo and Palouse mining districts located in the northwestern part of the Forest, together, produced about $2,000,000 from 1860 to 1942, mostly from placer deposits. The Ruby Creek and Burnt Creek districts included lead-silver and copper prospects. There was an unknown production from these lode mines as late as the 1930's.

b. Present Minerals Activity - There are no large or medium sized mines in production in the Forest, but there are ten active placer mines and three small active hardrock mines. In 1984 there were over 70 small operations using recreational-type suction dredges. (See Table 2 in Appendix J of the Forest Plan.) Because of the confidential nature of mineral exploration, an accurate assessment of the activity is difficult to determine; however, many areas of the Forest are being explored and prospected for valuable minerals.

The old Hoodoo, Burnt Creek,and Pierce mining districts are again being explored for lode and placer minerals. Some placer companies operating in Alaska and Canada are considering moving their operation to this area due to a longer working season.

Several major mining and exploration companies have conducted ground geophysical, geochemical and geologic reconnaissance and some preliminary property examinations. Intensive exploration of kyanite claims on Woodrat Mountain in the south-central part of the Forest occurred in the late 1970's. Future development of the claims are presently speculative, but good potential exists. Near Smith Ridge in the north-central part of the Forest, mining companies have been interested in rocks containing aluminum silicate. There has also been interest in the possibility of mining quartz veins for their silica content in the Indian Henry Ridge area. In addition, near Papoose Saddle in the eastern part of the Forest, exists potential for the development of a silver-antimony ore body. This area has been explored several times.

Some of the metallic minerals found are gold, silver, antimony, copper, titanium, magnetite, lead, zinc, and iron. Nonmetallic minerals include kyanite, clay,, asbestos, feldspar, garnet, monzonite, mica, and silica. Based on current knowledge, the Forest does not contain oil, gas, or coal potential.

The Forest has 400.36 acres of mineral rights outstanding and 3,398.56 acres of reserved mineral rights where the surface is owned and managed by the Forest Service, but the mineral rights are owned by private interests. The Forest also has 935.16 acres where the land surface is owned by private interests, but the Forest Service retained the mineral rights. (See Table 3 in Appendix J of the Forest Plan.)

Areas of interest to "Rockhounds" are scattered throughout the Forest. Smokey quartz crystals, tourmaline, and associated pegmatite minerals are found throughout an extensive area in the north-central and eastern parts of the Forest. Leaf fossils are found in numerous scattered outcrops of the "Latah" formation which is associated with the extensive basalt flows in the western part of the Forest. Several areas containing gem garnet occur in the Palouse District.

Good quality rock sources for road construction occur sporadically throughout the Forest; historically they have been hard to locate. The best sources are developed from outcrops of the basalt rock which occur mostly in the western half of the Forest. Potential sources in the eastern half include unweathered granitic rock types, deposits of river gravels, and some small rhyolite intrusive bodies. It will be necessary to develop new aggregate sources due to new road construction.

With the higher gold values and the newer, more sophisticated methods of recovering gold, much of the Forest may have the potential to again produce economic quantities of gold. An increasing number of "recreational miners" are working numerous creeks where past activity has indicated gold potential. Gold panning for recreation is popular in the upper portions of the North Fork of the Clearwater River area, in the Lolo Creek drainage area, and in several drainages near the north-western part of the Forest.

There are five pending oil and gas lease applications involving 43,563 acres in the northern part of the Kelly Creek District. These lease applications are very speculative, and no development and little exploration is expected as a result from leasing.

Throughout the southern half of the Forest, numerous small "hot" springs occur in areas that have been classified by the U.S. Geological survey as being prospectively valuable for geothermal steam and associated geothermal resources. About 7,000 acres are rated moderate potential.
Overall, the Forest has about 182,300 acres rated moderate to very high potential, while 1,654,816 acres are rated low potential for locatable minerals.

Any citizen has a right to prospect, explore, develop, mine, and process locatable minerals and use certain surface resources reasonably necessary for these activities under the mining laws of the United States. The 1897 Organic Act specifically treats the mineral resources separately from and on a par with the surface resources. Congress specifically provided that National Forest lands reserved from the Public Domain would be subject to the mining laws, with the only stipulation being that persons entering and operating in the National Forests must comply with the rules and regulations covering the National Forests.

The Federal Land Policy and Management Act (90 STAT 2744) requires that all existing withdrawals, except those for wilderness areas, formally identified primitive areas, and national recreation areas, be reviewed before October 21, 1991. Mineral potential will be one of the criteria considered when the justification, establishment and/or revocation of withdrawals is reviewed. The review requires deciding whether the withdrawals are needed and how long they should be continued in light of the activities they support versus other activities. The Forest currently has 267,376 (including the Selway-Bitterroot Wilderness) acres of withdrawals and has proposed 2,147 acres of additional withdrawals.

A mineral potential map was developed utilizing the principles of the Mineral Resource Classification System of the U.S. Bureau of Mines and the U.S. Geological Survey (U.S. Geological Survey Bulletin 1450 - A, 1976). Data used to classify lands were abstracted from maps and reports covering the Forest. A major source of minerals information comes from the U.S. Bureau of Mines, Mineral Industry Location System (MILS). Other sources include numerous historical mining claim records, recent mining claim records, and the U.S. Geological Survey's Computerized Resources Information Bank (CRIB).

The Mining and Minerals Policy Act of 1970 (PL 91-631) states that "The Congress declares that it is the continuing policy of the Federal Government in the national interest to foster and encourage private enterprise in (1) the development of economically sound and stable domestic mining, minerals, metal, and mineral reclamation industries; (2) the orderly and economic development of domestic minerals resources, reserves and reclamation of metals and minerals to help assure satisfaction of industrial, security and environmental needs, (3) mining, mineral and metallurgical research, including the use and recycling of scrap to promote the wise and efficient use of our natural and reclaimable mineral resources, and (4) the study and development of methods for the disposal, control and reclamation of mineral waste products, and the reclamation of mined land, so as to lessen any adverse impact of mineral extraction and processing upon the physical environment that may result from mining or mineral activities". From this, it is clearly the intent of Congress to encourage prospecting and mining and minerals processing through means and procedures that will minimize the impacts on the environment.

It can be expected that, in the light of current and projected mineral shortages, prospecting and exploration activities in the U.S. will increase. Individuals and mining companies will direct their efforts towards the discovery of bulk, low-grade mineral deposits where past results and current studies indicate their presence. (See Table 4 in Appendix J of the Forest Plan.)

11. Human and Community Development - The human and community development goal of the Clearwater National Forest is to provide programs that will assist people and communities while enhancing Forest management programs. Various programs provide employment, job training, and environmental education to youth and senior citizens, many of whom are economically disadvantaged. Work is performed in environmental protection, resource management, and facilities improvement.

The Clearwater National Forest is located in an area that experiences a high rate of unemployment, a moderate level of poverty, and a moderate level of education. The average unemployment rate of Clearwater County in 1983 was 15.8 percent. In 1980, 8.2 percent of the population was estimated to be below the poverty level with 17.8 percent meeting financial assistance guidelines. The median school year completed is 11.7 years.

The Clearwater National Forest is involved in two programs that aid the economically disadvantaged person. One is the Human Resource Program and the other is the hiring authority given to the Forest Service by the Office of Personnel Management.

The Human Resource Program is divided into two categories: Sponsored programs, such as, the Young Adult Conservation Corps, Senior Community Employment Program, and Youth Conservation Corps. Funding for these programs is appropriated by Congress and allocated either directly or indirectly to the Forest Service. Hosted programs are defined as those for which the Forest Service receives no funding but provides a worksite, supplies, transportation, etc. Hosted programs include enrollees in special programs funded by Congress during periods of low employment opportunity, or during periods of need for employment or training opportunities for a particular age or ethnic group. The Forest Service Volunteers Program is considered a hosted program.

The Forest has sponsored three Young Adult Conservation Corps (YACC) camps. In Orofino, a residential camp for 60 enrollees operated for 33 months. When it closed, a 10-person nonresidential camp opened. A nine-person nonresidential camp in Kooskia operated three years. This program was discontinued in August of 1982.

The Forest has also sponsored Youth Conservation Corps (YCC) camps. A nonresidential camp in Kooskia, for approximately 15 enrollees, operated for 3 years. The Forest also operated a residential camp in Moscow for 2 years. YCC provides summer employment for 4 to 12 weeks to youth ages 15 through 18. The program emphasizes conservation and awareness of the natural environment.

The Senior Community Service Employment Program, commonly called the Older Americans Program, currently has 23 enrollees. This program promotes useful part-time work opportunities to unemployed, low income persons who are 55 years or older.

Volunteers in the National Forest perform conservation duties in every aspect of Forest management. The volunteers are trained on-the-job for any resource management task that they are willing to perform.

The Forest has long-range goals for achieving an equitable representation of minorities and women throughout the entire workforce. These goals are being achieved through the use of varying hiring authorities, such as the Cooperative Education Program and the Junior Fellowship Program. Present employees with potential for advancement are placed in Upward Mobility positions which provide on-the-job training and experience. Special emphasis is given to the placement of dual career couples to provide both spouses with Forest Service career opportunities.

In recent years, the Clearwater has made a concentrated effort to employ Native Americans in forestry related jobs, such as, tree planting, fire fighting, trail maintenance, and thinning and slash removal contracts.

The Cooperative Education Youth Opportunity Campaign and Federal Junior Fellowship (FJF) programs are hiring practices. Cooperative Education and FJF offers employment to college students to further their education through on-the-job training and creates the opportunity for a conversion to a permanent position after graduation. Under the FJF program, outstanding high school seniors are hired for a work-study program which encourages and may lead to a career in the Forest Service. This program has been used primarily to recruit Native Americans into the workforce.

The Stay-In-School program hires economically disadvantaged high school students for part-time employment through the school year and full-time employment during the summer.

Presently the Forest is involved in the following programs:

	Person years	Appraised values
Senior Community Service Employment	17.5	249,007
Volunteers in the National Forest	11.8	155,925
Cooperative Education	3.0	46,700
Student Stay-In-School	5.0	10,000
Youth Conservation Corps	14.0	23,434
Federal Junior Fellowship	.3	2,700

The Forest's ability to supply the needed jobs and training for the programs exceeds the allowed number of enrollees. The Forest is allowed a certain number of enrollees per program based on factors such as Forest workload, unemployment rates, and the ability to accommodate the workers.

Emphasis in the Human and Community Development Program is expected to shift from sponsored programs to the "volunteer" program.

12. Lands - Land uses of the Clearwater are typical of those found on most National Forests, but because of the numerous streams and rivers, several small hydroelectric power project proposals are being studied. Development of small hydropower projects have potential impact on the Clearwater's land and resources in certain areas.

Right-of-way acquisitions, and grants are most active in areas of intermingled land ownership. Currently there are seven Road Right-of-Way Construction and Use Agreements with large timberland owners. Future timber management of portions of National Forest and private timberlands within these agreement areas, that have no access, will require additional right-of-way acquisitions and grants. Also, future timber management of portions of National Forest, small and large private timberlands outside of the Road Right-of-Way Construction and Use Agreements, that have no access, will necessitate the acquisition of right-of-ways across a variety of private landowners and the granting of right-of-ways across National Forest System land.

Since the establishment of the Clearwater National Forest in 1908, several Executive Orders and Public Land Orders between 1911 and 1973 have added land from other Forests to the Clearwater. In addition, land adjustments have increased the Clearwater's land base by 233,724.33 acres. These were acquired through:

Land Exchanges	126,801.44 acres
Donations	105,124.15 acres
Purchases	1,662.30 acres
Transfers	137.04 acres

Land exchange appears to be the primary method by which to attain ownership. The majority of the exchange opportunities exist within the Palouse Ranger District which is greatly intermingled with vast acreages of corporate ownerships, State of Idaho land, and other private ownership. Possibilities for exchange also exist within the checkerboard ownership in the North Fork and Powell Ranger Districts.

Through fiscal year 1984 the Clearwater National Forest has acquired 146 scenic easements covering 3,735 acres of land. One of the easements was donated to the United States. These interests were acquired within the Middle Fork-Lochsa Recreation River corridor. Seventy-one acres were purchased in fee title, and 121 acres were acquired in fee through three exchanges within the corridor. Opportunities still exist to acquire scenic easements should funding become available. The amount of fee ownership acquired within the river corridor is restricted by the Wild and Scenic Rivers Act.

The Small Tracts Act of 1983 has provided the authority to resolve many title claims. In situations where parties are encroaching on National Forest System land due to erroneous surveys or other title problems, the Act can be used to resolve the encroachment by selling the parcel or interchanging the Federal tract for a private tract. Several encroachments have already been identified and action taken to resolve through the Small Tracts Act. It is expected that many more encroachments exist which have not been identified.

13. Facilities

a. Roads - Prior to the 1930's the Forest had very few roads. The roads that did exist were horse and wagon roads that ended at or near the Forest boundary. In the 1930's road construction was accomplished by the Civilian Conservation Corps Program and other emergency relief programs of the depression years. By 1939 roads had reached every Ranger Station. Very few roads were constructed in the 1940's. In the 1950's the Forest began a timber sale program which increased the construction of roads. Construction has continued at a steady pace since.

Access to the Forest is provided by a network of Federal, State and county roads. U.S. Highway 12, a Forest highway, bisects the southern portion of the Forest. Access from the west to a large portion of the Forest is provided by State Highway 11, the Grangemont Road, and the county portion of the Kamiah-Pierce Road. The Palouse District has State Highways 3, 6, 8, 95, and the Elk River Road (county). Access from the east is over U.S. Highway 12 and Pierce-Superior No. 250. A major portion of the commercial hauling generated in the Forest utilizes these roads to reach sawmills in Superior and Missoula, Montana, and Orofino, Headquarters, Pierce, Kooskia, Kamiah, Lewiston, St. Maries, and Princeton, Idaho.

In 1986 there were approximately 4,275 miles of road system on or adjacent to the Forest. Four hundred and forty miles of these roads are classified as Forest arterials, 750 miles as Forest collectors, and 2,670 miles as Forest locals. (See Glossary for definitions of arterial, collector, and local roads.)

Approximately 380 miles of roads that were built in past logging areas are not included in the system and do not have value for future access. About 500 miles of system roads in the Forest are in joint ownership with cost share cooperators. These cost share agreements provide for the sharing of original road construction costs and maintenance costs and reduce the total miles needed for road access for each party.

The type of surfacing on the Forest road system is asphalt concrete, 63 miles; aggregate, 1,172 miles; and native soil, 2,622 miles.

The present Forest road system provides access to approximately 30 percent of the Forest's land area. Future timber management of unroaded portions of the Forest will require additional roads. The numbers, types, and locations of these roads will depend on this and other land uses.

The major portion of the existing Forest road system has been constructed to provide access for timber harvest. Mature and over-mature stands of timber not burned over in major wildfires, particularly mature stands of western white pine, have received the priority for access. Due to the high value of these stands, a major portion of the construction cost has been paid through the sale of the timber. Generally areas less difficult and expensive to reach have been developed.

The Forest currently contains about 800,000 acres of timberlands that can be harvested using tractors and skylines with spans of less than 1,500 feet. About 50 percent of these lands have road systems. New access will involve more expensive construction than in the past to areas with less immediate dollar returns in timber receipts. Much of the future major arterial road construction will depend on the need for timber in the roadless areas.

Included within the Wild and Scenic River Corridor is a portion of U.S. Highway 12 known locally as the Lewis and Clark Highway. This Federal highway is the only major transportation link across this section of the State. For a number of years it has been used as a major route for commercial truck traffic, especially grain traffic from central Montana to the Port of Lewiston. With up to 100 semi-trucks a day, and the relatively narrow width of the roadway, safety has become of increasing concern to the Idaho Department of Highways. The accident rate has increased significantly since this truck traffic started with resulting requests by the Highway Department to improve alignment and add passing lanes where possible.

Some work has been done over the past several years but because of the constricted nature of the Lochsa canyon and the close proximity of the highway to the rivers, some construction conflicts have arisen. The potential impacts on the Wild and Scenic River values, primarily encroachment on the River, as well as, visual effects associated with the vegetation and natural rock features has become an increasing concern.

b. Trails - Historically, one of the main routes, the Lolo Trail, (parts of which still exist today) was once a main route for east-west travel between Idaho and Montana. Other routes, including the Nee-Me-Poo Trail, also coincide with some present day trail systems.

Essentially all of the trails in the Clearwater Forest were developed between 1916 and 1933. During that period trails were constructed following almost every major ridge line and stream course in the Clearwater River drainage. This system is believed to have totaled about 2,500 miles suitable for pack and saddle stock. It provided the primary transportation system for administrative and recreational travel until the mid 1940's.

With the advent of the helicopter in the mid-to-late 1950's and a more extensive road system, administrative use of the trail system dwindled. Funds were diverted from trail construction and maintenance almost entirely to the road construction program.

The primary use of the trail system from 1950 to the present has been for recreational travel. The majority of users have traveled using pack and saddle stock. Backpacking has slowly increased in popularity, but is still less than stock use. Although there is some off-road vehicle (ORV) use, most trails are unsuitable for this type of use.

As the road system increased and accessed previously unroaded areas, much of the trail system within these areas was either physically destroyed or abandoned. This continues to be the pattern today since often the most desirable location for roads coincides with trail locations and little attraction remains for the remnant trail segments within logged areas.

The present trail system inventory includes 358 miles in wilderness and 1,182 miles outside wilderness. Funding for maintenance has remained insufficient to adequately maintain access to the system and prevent further loss of trails facilities. Approximately one third of the present trail miles are essentially unusable because of tread erosion or brush and/or windfall blockage.

Emphasis is now placed on maintaining 494 miles of trails classed as mainline trails. Essentially all maintenance has been suspended on the remaining 1,046 miles of the trail system. Yet, about one-half of these remaining miles are still accessible due to voluntary efforts of users to clear windfall and encroaching vegetation. Outfitters and guides perform a significant amount of this voluntary clearing to conduct their business.

14. Protection - Fire, insect and disease protection are important functions. Large fires during 1910, 1919, 1929, and 1934 burned over one million acres within the present boundaries. These areas have now revegetated into stands of heavily stocked brush and timber. Steep terrain, poor or nonexistent access, and heavy fuels over extensive areas create potential for massive wildfires. Since 1960 the Forest has averaged 105 lightning and 13 man-caused fires per year. The number of man-caused fires are increasing while fires of over 300 acres in size have decreased.

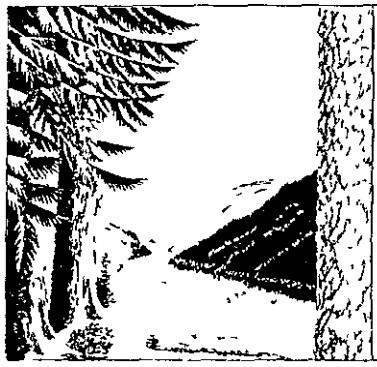
Blister rust and the mountain pine beetle have combined to nearly eliminate western white pine from extensive areas of the Forest. Efforts to control blister rust were not effective. Development of rust-resistant white pine has been successful and over time may permit management of this species for a timber crop. Blister rust and other diseases have created dead fuels in excess of 100 tons per acre, often on continuous slopes of 60 percent or more.

The Forest has extensive stands of lodgepole pine in the 50 to 70 year age class that may have the potential to have beetle activity in the future. Most of these stands are in accessible areas in the Upper North Fork and Upper Cayuse Creek drainages.

Another important resource function is protecting air quality. The largest sources of air pollution from Forest activities are smoke from fires (both wildfires and prescribed fires) and dust from unpaved Forest roads.

Under the Clean Air Act, the Selway-Bitterroot Wilderness is classified as a Class I air quality area. This means that air quality may be only minimally degraded from its present levels by activities within or outside the area. A determination of effects on air quality must be made on any activity which could change this quality.

Changes in Forest protection will occur with time as areas become roaded, timber is harvested, and recreation increases and changes. The increase in man-caused fires may continue. Limited access and extensive areas of natural fuels will continue to provide the potential for large wildfires and insect and disease epidemics.



Chapter IV

Environmental Consequences

IV. ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter forms the scientific and analytic basis for comparison of the alternatives, including the Preferred Alternative, described in Chapter II. Environmental consequences are the expected effects of activities scheduled to implement an alternative. The effects of all the major activities and resource programs are discussed. Economic and social effects are discussed where applicable. Economic effects include both priced and nonpriced benefits. Chapter II, Section 17, provides a detailed description of both priced and nonpriced benefits.

The consequences are described as quantitative or qualitative changes from the current situation in terms of significance, magnitude, and duration. The discussion identifies consequences that are direct, indirect, cumulative, or unavoidable. The relationship of short-term use of resources to long-term productivity is also discussed along with irreversible and irretrievable commitment of resources.

Mitigation was an important consideration in the formulation of standards and guidelines, prescriptions, and minimum management requirements associated with each of the alternatives. These items are discussed in other parts of this document or in special sections of the appendices and will not be repeated here.

This chapter is presented in a way which attempts to avoid redundant statements. For instance, the specific activities generated to enhance fish habitat are limited to relatively few acres in the Forest. However, the impacts on fish habitat are inherent in several other activities (timber harvest, road building, livestock grazing, etc.). The discussion for specific activities associated with fish habitat improvement is short, but effects on fish habitat are discussed in sections related to other activities or resources.

This chapter was extensively rewritten between Draft and Final documents in response to public comments and new data. To make it easier for the reader to review, the format was changed so each management activity section shows the major changes made.

During public review of the DEIS, many commented on Alternative E, the Proposed Action in the DEIS. As a result of those comments, a new alternative, the Preferred Alternative K was developed. To assist the reader in reviewing Chapter IV, and understanding the Preferred Alternative K, the differences between Alternative E and the Preferred ALternative K are highlighted in the summary of changes between the Draft and Final EIS.

FOREST PROGRAMS AND ACTIVITIES AND THEIR ASSOCIATED EFFECTS

A. WILDERNESS

Summary of Changes Between Draft and Final

In the Preferred Alternative, the Clearwater National Forest is recommending two new wildernesses and additions to the existing Selway-Bitterroot Wilderness. Acreage of the two new areas have been increased over Alternative E and the acreage of the wilderness additions have been reduced when compared to Alternative E. The changes are shown in Table IV-1. Included also are changes in those recommended wildernesses that are contiguous to the Clearwater Forest.

Table IV-1. Recommended Wilderness - Changes Between Draft and Final - Alternative K

Area	Acreage		
	Alternative E	Change	Alternative K
Mallard-Larkins:			
Clearwater	63,000	+ 3,700	66,700
Idaho Panhandle	76,300	0	76,300
Total	139,300	+ 3,700	143,000
Hoodoo:			
Clearwater	100,100	+12,900	113,000
Lolo	81,850	+ 7,680	89,530
Total	181,950	+20,580	202,530
Selway-Bitterroot:			
Additions:	25,771	- 7,271	18,500
Total Recommended Wilderness:			
Clearwater	188,871	+ 9,329	198,200
Other National Forest	158,150	+ 7,680	165,830

The additions to the Hoodoo area were in direct response to public comment between the Draft and Final. The other changes were made primarily for management and identifiable boundary reasons.

Environmental Consequences

The Clearwater National Forest presently contains 259,165 acres of classified wilderness. This represents the Clearwater portion of the 1,337,910 acre Selway-Bitterroot Wilderness. All alternatives include this classification.

Sixteen inventoried roadless areas totaling 950,311 acres meet minimum criteria for wilderness classification. Alternative A (current direction) represents the original RARE II recommended wilderness as displayed in the RARE II Final Environmental Statement, January 1979. Alternative B does not include any new recommended wilderness. All other alternatives from C through K recommend varying amounts of wilderness from a minimum in Alternative C to the maximum of 950,311 acres in Alternative I. For those areas recommended for wilderness, the basic physical value of little or no evidence of man will be maintained until such time that Congress enacts a wilderness bill for the State of Idaho.

Table IV-2. Area Recommended for Additional Wilderness (thousand acres)

Alternatives/Benchmarks													
A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
190	0	46	130	189	189	297	454	716	950	258	198	0	0

Additional wilderness classification would reduce present net value (PNV) and total contribution to the regional economy, because timber harvest would be precluded in these areas. However, those businesses and individuals dependent on recreation and tourism would benefit from the classification of wilderness. Water quality and fisheries habitat would remain unaffected under wilderness designation.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - The establishment of wilderness would have some affect on long-term productivity. Opportunities to increase productivity through management of timber and certain wildlife habitats would be foregone. The opportunity for primitive recreation would be maximized as natural appearing landscapes would be preserved. Forest-users who enjoy solitude and a natural appearing landscapes would be accommodated. Fisheries, water quality, old-growth timber, and associated wildlife species would be allowed to follow natural successional trends without human influence. This would provide an opportunity for the study of ecological relationships within and among different plant and animal associations. The dynamics of natural agents, including fire, insects, disease, etc., could be observed to aid in assessing control outside the wilderness. Buildup of natural fuels may increase wildfire hazard, though the use of natural fire would minimize this effect. The gray wolf and grizzly bear would benefit the most from wilderness classification.

Irreversible and Irretrievable Commitment of Resources - Timber lost to natural causes would be lost as commodity products.

Adverse Effects Which Cannot Be Avoided - Control of insects, diseases, and noxious weeds is generally prohibited within wilderness and would only be done to prevent damage to adjacent areas outside the wilderness. Methods to suppress wildfires are restricted to those which cause little or no ground disturbance.

Disturbances could spread to adjacent nonwilderness with a high potential for monetary and product loss.

Adverse effects of managing areas to protect wilderness values may be mitigated by intensively managing remaining National Forest areas for commodity production. This strategy is best exhibited by Alternative G; however, as noted in Table II-22, page II-119, the response for the major issues of resident fish production, water quality, and numbers of elk is lower in the long run than other alternatives.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls
Private ownerships, within and adjacent to some of the areas recommended for wilderness, could cause administrative problems. These are discussed in Appendix C.

B. DEVELOPED RECREATION

Summary of Changes Between Draft and Final

There were no changes in developed recreation between the Draft and Final Plan

Environmental Consequences

The Forest's 33 developed recreational sites occupy 591 acres and, with limited exceptions, have little direct effect on management of other resources. Because most existing and potential developed sites are located within or adjacent to riparian areas, adverse impacts on water quality and riparian ecosystems can result from overuse. Studies have shown that use of campgrounds and their surrounding areas may adversely affect soil and water in localized areas, causing soil compaction, overland flow, erosion, and degraded water quality (Cole and Schreiner, 1981; Pacha, 1980). Campsites show significant resource damage if maintenance is not sufficient.

As management emphasis on developed recreation decreases, the risk of environmental degradation from sewage, garbage, and vandalism will increase as use increases. For example, when funding is limited for maintenance, developed sites with leaking toilet vaults or inadequate sanitary facilities may adversely affect water quality. Such impacts have not occurred at existing levels of use in the Clearwater Forest and would not be expected until use approached the theoretical capacity of campsites.

Existing developed recreation is treated equally in all alternatives. Presently, most of the developed sites are used at less than full capacity. The Forest capacity of 369,000 recreation visitor days (RVD's) per year should exceed anticipated use for at least three decades. After the third decade additional sites may need to be developed to meet demand. Anticipated use at developed sites is shown in Table IV-3.

While Forestwide recreational demand will be met by existing sites, demand and opportunities exist in the vicinity of the Aquarius/Isabella area on the North

Fork of the Clearwater. To meet these specific demands and opportunities, a new campground near the mouth of Isabella Creek area and (tentatively) a new VIS Center along the Middle Fork of the Clearwater are planned for the first decade in all alternatives except B.

Table IV-3. Anticipated Use at Developed Sites (thousand recreation visitor days per year)

	DECADE					
	1	2	3	4	5	Current
All Alternatives	201.1	276.3	369.2	369.2	369.2	166.2

Recreation at developed sites is generally more costly to manage per acre and per visitor day than in undeveloped settings. This is because of the high capital investment required in preparing sites and in providing and maintaining facilities necessary for developed sites.

Some income is received from user fees at developed sites, but this income is relatively small and has little effect on PNV generated from the Forest. Income generated from recreational user fees amounts to about 20 percent of the present day cost of operating and maintaining developed sites in the Clearwater Forest.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - The continued management of all existing recreational sites would have an adverse effect on long-term productivity of the land and mineral entry. The additional development of recreational sites and a VIS site at Isabella Creek and Middle Fork of Clearwater River would add five to ten more acres to the existing acreage in all alternatives except B. The vegetation and soils at these sites could be severely impacted by developed facilities or by users. These effects would remain evident for a long time even if the sites were abandoned. Efforts to restore sites to previous productivity would be costly. In perspective, however, only about 600 acres would be affected for all sites.

Irreversible and Irretrievable Commitment of Resources - Once established, recreational sites are maintained and become an irreversible, long-time commitment of a resource. Wood fiber and forage which would have been produced on the sites would be irretrievably lost.

Adverse Effects Which Cannot Be Avoided - A portion of the vegetation on these sites would be lost or suppressed. Noise from the concentration of campers would exist. The opportunity for vandalism would be present due to the numerous and costly facilities concentrated in one place. Most big-game habitat in the area would be destroyed or vacated. Riparian areas and their associated resources (water, soils, vegetation) could be negatively impacted, but these areas represent a very small percentage of total Forest so impacts would be correspondingly small.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls- Because of the location of the Forest in relation to large population centers, it is unlikely that developed sites on National Forest land would conflict with State of Idaho and other private sites.

C. DISPERSED RECREATION

Summary of Changes Between Draft and Final

The estimate of recreation visitor days (RVD's) for the Preferred Alternative are a function of recommended wilderness and designated unroaded areas.

Environmental Consequences

Dispersed recreation, by definition, is that which occurs outside developed sites. In the Clearwater, hunting, fishing, hiking, camping, horseback riding, sightseeing (by vehicle), berry picking, and ORV use (including snowmobiles) are major uses. Boating, specifically rafting and canoeing on the larger rivers and streams, swimming, and photography are major uses also but confined to smaller areas.

Specific Forest Service activities relating to dispersed recreation include maintenance and construction of facilities such as trails, trailheads, toilets, hitch racks, stock ramps, parking areas, and information signs to enhance the recreational experience of the Forest visitor and to protect other resources.

The effects of dispersed recreation on soils, water, and vegetation are similar to the effects discussed for developed recreational sites, although costs per acre for maintaining facilities are not as high, and the effects are spread over a larger area.

Dispersed recreation can also have direct impacts on water quality, soil, and vegetation mainly in areas of heavy use. Damage to riparian ecosystems can occur through overuse of campsites, trails, or other sensitive areas where use may be concentrated. Although the effects for the most part are localized in small areas, soil compaction, overland flow, erosion, and degraded water quality can, nonetheless, occur (Cole and Schreiner, 1981; Pacha, 1980). Significant effects are not occurring or expected to occur within the planning period.

Off-road use of vehicles can adversely impact soil, vegetation, and water in heavy-use or highly erosive areas. These effects occur in relatively few areas. The impact of horse and foot traffic in wet or sensitive areas is more common. Well-used trails and campsites show significant resource damage when visitors fail to use minimum impact techniques. Livestock usage and/or improper human sanitation can lead to increases in bacterial contamination of streams and lakes (Giardia lamblia, etc.) (USDA, 1981).

Dispersed recreation occurs in two general settings: roaded and roadless. The amount of each setting which can be provided is directly related to the amount of timber harvest and road construction allowed in each alternative. This relationship is discussed in the timber harvest and road system sections.

Existing roadless areas provide opportunities in near natural settings for semiprimitive motorized and nonmotorized activities such as horseback riding, hiking, hunting and fishing in large expanses of unroaded land, cross-country skiing and trailbiking. Roadless areas also provide an important land-base outside wilderness for the outfitting industry in Clearwater and Idaho Counties.

Roaded areas open to motorized access provide opportunities for activities like pleasure driving, snowmobiling, motorcycling on roads, hunting and camping. Roaded areas closed to motorized access provide opportunities for hunting on foot or on horseback near roads. Motorized access is restricted by various seasonal or yearlong closures on many of the Forest's roads. Effects of road closures are discussed under the road management section.

The acreage available for each category of recreational setting is shown in Table IV-4.

Table IV-4. Recommended Wilderness, and Designated Unroaded and Roaded Management (thousand acres)

Alternatives/Benchmarks

	A (cd)	B	C	D	E	E1	F
* WILDERNESS	190	0	46	130	189	189	297
UNROADED	93	0	71	294	188	188	290
ROADED	1295	1578	1461	1154	1201	1201	991

Alternatives/Benchmarks

	G	H	I	J	K (pa)	MAX PNV	MIN LVL
* WILDERNESS	454	716	950	258	198	0	0
UNROADED	0	14	0	169	242	0	0
ROADED	1124	848	628	1151	1138	1578	1578

* Does not include the 259,000 acre Selway-Bitterroot Wilderness.

Recommended wilderness acres range from 0 acres in Alternative B to 950,000 acres in Alternative I. The other alternatives recommend acreages for wilderness between these two figures.

Most alternatives contain not only a wilderness recommendation but propose other roadless areas to remain unroaded without a wilderness classification. Areas which are important or critical for wildlife, semiprimitive recreation, or watershed/fishery management are designated to unroaded management prescriptions to help meet objectives of each alternative. Areas designated unroaded vary from 0 acres in Alternative B to 294,000 acres in Alternative D. These areas will be reviewed at least every 10-15 years.

Areas that will be developed for the management of timber, wildlife, or other resources range from a low of 626,000 acres in Alternative I to a high of 1,578,000 acres in Alternative B.

Dispersed recreation is affected by the recreational setting (degree of development or unroaded status). For this reason, dispersed recreation is split into three categories; roaded natural; primitive/semiprimitive (no roads); and wilderness. As roadless areas are developed, opportunities for dispersed recreation in primitive/semiprimitive settings decrease while opportunities for recreation in roaded natural settings increase. In the Clearwater Forest the primitive setting occurs under the wilderness recommendations only.

Table IV-5 shows all three categories of recreational use by alternative by decades one through five.

Table IV-5. Dispersed Recreation Projected Use and Capacity (thousand recreation visitor days)

	Alternatives/Benchmarks													
	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MIN LVL	MAX PNV
Decades														
	Roaded Natural													
1	556	556	556	556	556	556	556	556	556	556	556	556	556	556
2	689	689	689	689	689	689	689	689	689	689	689	689	689	689
3	820	820	820	820	820	820	820	820	820	820	820	820	820	820
4	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001
5	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221
	Semiprimitive (Motorized or Nonmotorized)													
1	148	200	185	159	149	149	114	51	2	0	127	131	200	200
2	184	221	217	197	185	185	142	56	3	0	157	163	248	221
3	178	111	125	234	220	220	169	28	3	0	171	194	295	111
4	114	0	32	280	241	241	206	0	3	0	129	237	332	0
5	114	0	32	280	241	241	210	0	3	0	129	262	332	0
	Wilderness (Primitive/Semiprimitive Nonmotorized)													
1	104	52	68	94	104	104	138	232	249	251	126	121	52	52
2	140	76	96	128	140	140	192	262	321	324	168	154	76	76
3	177	100	124	159	177	177	226	290	392	395	210	179	100	100
4	183	101	124	159	182	182	226	290	397	458	211	179	101	101
5	183	106	124	159	182	182	226	290	397	492	211	184	106	106

(All figures underlined show the decades in which projected use equals potential carrying capacity. Figures not underlined show projected use that does not exceed potential capacity.)

The projected use figures for all types of dispersed recreation as shown in Table IV-5 are not considered demand figures, although there may be some correlation. Demand takes into account many factors. For example: Is an increase in use in an area a reflection of increased demand or is it just a shift from other areas? Another example, is, does the demand increase for a particular area if it suddenly becomes classified for wilderness and, if so, is this true demand or is it again just a shift from other unclassified roadless areas? There is no doubt that as more land becomes developed, demand for dispersed use on the remaining roadless, and wilderness will increase.

What is shown in Table IV-5 is a periodic increase in projected use for each type of dispersed recreation up to the point that use equals capacity. Capacity for each alternative is based on the amount of roadless or wilderness available for use. It is true that use could exceed capacity but then the quality of the particular type of experience would deteriorate to the point that use would drop off. We are making the assumption that under a managed situation, use will stop, or sites will deteriorate to the point that use limitations would have to be imposed.

As shown for the roaded natural recreation, projected use does not equal capacity during the first five decades for any alternative. This is because of the large amount of this type of recreation available and also because the capacities are quite high. All alternatives have an equally large amount of existing roaded land suited for this type of recreation.

Primitive and semiprimitive recreational use increases into the future as well, though, capacity becomes constraining by the fourth decade for all alternatives except the Preferred Alternative K. At that point, capacity is dependent solely upon the amount of roadless area in that alternative. Capacity is highest under Alternatives D, E , E1, F and K (Preferred Alternative) which have high levels of roadless land exclusive of wilderness, and no or very low capacity in B, C, G, H, and I. This is because the alternatives designates little or no land to roadless prescriptions, as in B and C, or designates large amounts of roadless acres to wilderness as in G, H, and I.

With the development of the Preferred Alternative K between the Draft and Final EIS, a different type of dispersed recreation has emerged; nonmotorized recreation in a roaded natural setting. The creation of Management Area C8S which precludes motorized public travel will enhance big-game summer range management. (See Wildlife section.) This type of management will favorably affect those recreationists who cannot or do not like to walk or hike over rough terrain and yet want to get away from the noise of motorized vehicles. Those who like to use motorized vehicles including ORV's to hunt, fish, or just visit certain areas of the Forest will be adversely affected.

Even though Alternative B has no designated roadless areas, projected use during the first three decades remain high although decreasing each decade. This is because of the lag time between implementation of the plan and the roading of roadless areas designated for development. At the other extreme, Alternatives G, H, and I show very low levels of use because large acreages are recommended for wilderness and the use shows up in the wilderness portion of Table IV-4.

Wilderness use becomes constraining in the third, fourth or fifth decade, at which time capacity is directly tied to the amount of wilderness acres available.

When projected use exceeds capacity, the quality of the recreation will be degraded if use is not limited. Excessive use in roaded natural, semiprimitive or wilderness settings can cause erosion, soil compaction, and loss of vegetation along main trails and roads, and campsites. These are minor effects from the total Forest standpoint but are important aesthetic effects to those people using the trails, roads, and campsites.

Mitigation measures include direct site hardening, rehabilitation, locating new sites, redirecting use. A recent method referred to as limits of acceptable change (LAC) will be used within classified wilderness as a means to protect the wilderness values.

The miles of trails available for recreationists varies slightly by alternative depending upon the amount of development. (See Table II-17.) In other words, as roads are constructed across or over trails, obviously the use and value of the trails become reduced or even nonexistent.

Projected increased populations of big game under Alternatives D, E, E1, F, J, and K especially will provide high quality recreation for people who want to hunt, photograph, or observe wildlife. Potential hunting opportunities expressed as potential hunter recreation visitor days are illustrated in Table IV-6.

Table IV-6. Potential Hunter Recreation Visitor Days (for all big-game species) (average thousands per year in each decade)

Alternative	Decade 1	2	3	4	5	15
A (cd)	74	91	89	86	78	56
B	81	89	87	82	77	46
C	81	135	154	130	82	43
D	84	118	118	102	86	84
E	84	111	121	102	86	84
E1	84	107	110	104	84	84
F	94	109	99	94	103	94
G	79	85	82	80	77	56
H	74	95	93	81	74	74
I	68	75	75	62	62	62
J	84	118	118	102	86	84
K (pa)	80	109	131	143	143	122

Hunting RVD's are dependent upon the available big-game, type of hunting experience available, length of seasons, and bag limits. The hunting RVD's shown above are based on habitat potential. Habitat potential is comprised of many components, such as forage, cover, and security areas. Alternatives D, E, E1, F,

J, and K (Preferred Alternative) provide the best mix of forage, cover, and habitat and exhibit the highest hunter RVD's. Alternatives A (current direction), B, and C provide low hunter potential because high timber activity and road densities would reduce big-game cover and security. Alternatives G, H, and I provide large acreages of designated wilderness where no planned habitat management can take place, and forage production on winter range becomes a limiting factor. Because of this and the lack of access, lower hunting opportunity is estimated in these alternatives.

Increased opportunities for big-game hunting would result in increased local employment and income opportunities. Larger big-game populations have the potential to generate license-fee receipts to the State, a major source of revenue for the Idaho Department of Fish and Game, and also for commercial outfitter and guide income.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - The short-term use (construction and maintenance) of trailhead facilities, toilets, hitchracks, stock ramps, and loading areas would have long-term effects on productivity similar to developed recreational sites. Although trails can be abandoned and may eventually return to near original condition, this is not likely to happen as long as the demand for dispersed recreation remains high. Overall impacts are anticipated to be minor.

Irreversible and Irretrievable Commitment of Resources - Once facilities and trails are constructed, they are likely to be maintained into the foreseeable future. The vegetation displaced and soil productivity lost by these facilities would constitute an irretrievable loss of resources. Losses would be insignificant in terms of acres involved.

Adverse Effects Which Cannot Be Avoided - The negative impacts on riparian areas, water quality, and soils from the construction and maintenance of facilities and trails cannot be totally avoided. Some avoidance can be attributed to application of mitigation measures and plan direction and standards which protect riparian areas. Resultant adverse effects should be minor.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls - No conflicts with other land management plans are likely to occur as a result of dispersed recreation.

D. UNROADED MANAGEMENT

Summary of Changes Between Draft and Final

In the Preferred Alternative (K) 226,340 acres are in Management Areas A3, C1, and C6 which are all recommended for unroaded management. This is an increase over Alternative E of 37,872 acres. All acreage changes are shown in Table IV-7.

Table IV-7. Unroaded Management - Changes Between Draft and Final - Alternative K (Preferred Alternative)

Area	Acreage Alternative E	Change	Alternative K	Changed To:
Elizabeth Lakes	9,800	--	9,800	--
Little North Fork	1,600	- 1,600	0	Unsuitable
Kelly Creek	8,920	- 5,960	2,960	Recommended Wilderness
Moose Mountain	13,900	+ 2,300	16,200	Boundary Adjust
Toboggan, Cayuse, Monroe	30,420	+26,360	56,780	Unroaded Fish/Wildlife
Fourth-of-July	45,120	- 20	45,100	Acreage Adjust
Rabbit/Colt Creek	0	+12,000	12,000	Unroaded Fish/Wildlife
Lochsa Face	25,185	- 2,685	22,500	Acreage Adjust
Coolwater	4,500	--	4,500	--
North Lochsa	18,663	+ 7,137	25,800	Acreage Adjust
Fish/Hungery Creek	30,360	+ 340	30,700	Unroaded Fish/Wildlife
Mgmt Area C3	--	+15,000	* 15,900	--
Total	188,468	+52,872	242,240	

* Total - An additional 15,900 acres of Management Area C3 Elk winter range is located within Management Areas A3, C1 and C6.

The increase in unroaded management in the Preferred Alternative K when compared to Alternative E is due primarily to public concerns with proposed development of lower Kelly Creek, the Cayuse, Toboggan, Monroe, creek drainage complex and the upper Elk Summit (Rabbit/Colt Creek). In Alternative E, these areas were to be managed for fish and wildlife in conjunction with timber management.

Environmental Consequences

Varying acreages are designated unroaded by alternative from 0 acres to 294,000 acres. These designations do not include areas recommended for wilderness. Areas designated unroaded will be managed to provide or enhance wildlife or fish habitat, to protect water quality, to provide a setting for semiprimitive recreation, to maintain old-growth timber, or to provide for a combination of these amenity resources. Natural appearing landscapes will be preserved. See Chapter II for a description of the objectives of each alternative. Acres of roadless designations are shown in Table IV-4.

Roadless designation reduces PNV and contribution to the regional economy because of limited timber harvest, but recreational-dependent businesses will benefit from increases in opportunities through improvements to wildlife habitat.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Restriction of road construction would have some effect on long-term productivity. Timber harvest would be limited, but the productivity of most of the other resources would be maintained. The risk of more intensive wildfires may be slightly increased by the build-up of fuels.

Irreversible and Irretrievable Commitment of Resources - There are none since unroaded management can be changed to roaded management in a new decision subject, of course, to public review.

Adverse Effects Which Cannot Be Avoided - Unroaded designation restricts the production of market outputs from those lands. Timber harvest is limited. Mineral exploration may be more restricted because of the lack of roads. These valid mining claims which require road access will be permitted with the least effect on the unroaded characteristics of the area(s).

Conflicts with Objectives of Other Land Management Plans, Policies and Controls- Some of the areas proposed for unroaded management adjoin private property, and roadless prescriptions may conflict with objectives of private owners.

E. CULTURAL RESOURCES

Summary Changes Between the Draft and Final

There were no major changes between the Draft and Final.

Environmental Changes

The major purpose of the Forest's cultural resource management program is to inventory and manage cultural resource and/or values, and to comply with Federal laws, regulations and policies. Therefore, cultural resource values will be addressed equally in all alternatives. An inventory of sites where ground-disturbing activities are planned will be required. If a cultural site is found before or during ground disturbing activity, it will be adequately documented and evaluated for possible preservation. Mitigation plans will be implemented if appropriate. Indian tribes will be consulted if a site appears to have Indian Tribes religious or cultural significance.

The Forest holds a high potential for yielding prehistoric and historic information. Indian Tribes, for example, are known to have seasonally exploited diverse environments ranging from riparian, village-type occupations to more ephemeral, high altitude campsites. The Forest also contains one of the nation's more well-known Indian Tribes and Euro-American transportation systems--the Lolo Trail. Studies have indicated that the "trail" is actually a complicated network of primary, secondary, and tertiary routes providing a direct link across the Bitterroot Mountains to the Plains (Shawley, 1977).

The corridor within which most of this activity occurred is protected through Federal legislation. The Lewis and Clark Trail and Nee-Me-Poo Trail are National Historic Trails and the Lolo Trail is a National Historic Landmark. In all alternatives except B, management prescription A6 will protect the trail corridor and associated sites even though timber harvest will occur. Alternative B will protect the trail tread as prescribed by law, but not the corridor. The Forestwide impact to the timber resource resulting from these prescriptions is expected to be minimal. Selective silviculture will be used where needed to protect the visual resource. The Lolo Trail System Implementation Guidelines expands upon this management prescription and is in the planning records.

In all cases, existing legislation and U.S. Forest Service manual guidance will be followed in management of this cultural resource. In addition, the National Park Service Comprehensive Management Plan for Management and Use of the Lewis and Clark Trail (1982) will be followed.

An "Overview" describing the Archeological and Historical Resources of the Clearwater was completed in 1976 (Hudson, 1976). This information is continually updated. Yearly surveys are made in areas proposed for potentially disturbing activities. Site data is entered into the State of Idaho cultural resource data base.

Other areas which are addressed are (1) Wilderness, and (2) Wild and Scenic River Corridors. Forest cultural resource survey strategies are standardized. They are similar to those developed by the Idaho Panhandle National Forest in 1978 and have been used by the Clearwater since 1979. Evaluation and identification of sites eligible for listing on the National Register of Historic Places is done primarily in conjunction with surveys of potential impact projects. Although the over all management direction for protection of cultural resources is spelled out in several laws and regulations, and is equally applicable to all alternatives, there are some differences in impacts between alternatives. For example, cultural resources discovered in wilderness and designated unroaded areas would result in minimal impact to other resources. This is because wilderness and unroaded management require very minimal disturbance to the ground. Alternatives H and I provide the largest amount of wilderness and roaded. Alternatives B and C, at the other extreme, would be affected the most by the discovery of cultural resources.

By the same token, those alternatives with large amounts of wilderness and unroaded limit the chance of discovery because of the very limited access and difficulty in inventorying acres.

Protection of cultural resource will have little effect on the PNV since so few acres are involved. Some timber may not be harvested on or near identified cultural sites but this volume will be small. Maintaining inventoried cultural sites and information is very important for preserving cultural ties with the past, and is considered an important component of net public benefits.

The management of cultural resources regardless of alternative will result in the exclusion of other uses especially where site protection is paramount. If the cultural evidence can be moved then, of course, potential effects would be minimal. Except for sites involving relatively large acreages such as the Lewis and Clark, Nee-Me-Poo and Lolo Trail Corridors most cultural resource protection involves relatively small acreages over the Forest.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - The protection given to cultural resource sites will have some effect on long-term productivity. Even though cultural surveys will be made prior to ground disturbing activities, these surveys may not always be successful in finding a cultural resource prior to the time the activities occur. Should this happen, the ground disturbing activity will be delayed while the area is inventoried and evaluated. Analysis of the results of this inventory may show that the activity needs to be diverted away from the site or that the impact of the activity upon

the cultural resource be mitigated before the activity proceeds. This can cause delay and, if the area is to be completely protected, will affect the long-term productivity of the site.

Irreversible and Irretrievable Commitment of Resources - Given the legislated and policy commitment to protect cultural resources, the harvestable vegetation grown on some of these sites represents an irretrievable loss of that resource. The overall loss of timber volumes is anticipated to be negligible.

Adverse Effects Which Cannot be Avoided - Some ground disturbing activities may affect cultural resource sites. However, reasonable precautions are included in the Forest Standards to protect cultural resources in all alternatives. An effect of maintaining and protecting cultural resources is an increase in management costs. A beneficial effect is educating the public about the past.

Conflicts with Objectives of Other Land Management Plans, Policies and Controls-The management of the cultural resource should have little effect on other planning efforts adjacent to the Forest. Indian Tribes religious and cultural concerns may conflict with land management plans on an individual project basis because of the possible reluctance of the Indian Tribes to identify sites. However, all reasonable precautions will be taken to reduce this potential. Coordination and cooperation occurs with the State Historic Preservation Officer to eliminate conflicts and better protect the resource.

F. RESEARCH NATURAL AREAS

Summary of Changes Between Draft and Final

In response to public comments, the Preferred Alternative K differs from Alternative E in two areas. Three thousand acres was added to the proposed Aquarius Research Natural Area (RNA), which now encompasses both sides of the North Fork of the Clearwater River below the Aquarius bridge. This larger area of 3,900 acres meets the Idaho RNA Committee's original proposal.

A new area of 330 acres in Four-Bit Creek on the Pierce District includes a representative, mid-elevation, highly productive western red cedar habitat type which also has produced the best stands of western white pine in the Forest. This area was proposed also by the Idaho RNA Committee in order to maintain a remnant undisturbed area for comparison to the intensively managed stands in these high timber producing areas.

Both of the additions also meet some of the assigned Regional habitat and vegetative types discussed in the next section.

Several other boundary adjustments were also made for potential candidates increasing the total gross acres in the Draft from nine areas totaling 5,982 gross acres to ten areas totaling 9,636 acres.

Environmental Consequences

Research Natural Areas are limited to research, study, observation, monitoring, and educational activities that are nondestructive, nonmanipulative, and that maintain unmodified conditions (FSM 4063.02).

The Northern Regional Guide assigns 29 habitat and vegetative types to the Clearwater National Forest to locate, evaluate, and recommend for RNA's *. There is one existing RNA (Lochsa) in the Clearwater Forest located along the Lochsa River. Forest Service personnel assisted Idaho Research Natural Committee personnel have located nine additional potential RNA's that are comprised of all but a few of the needed habitat types.

Table IV-8 displays numbers of RNA's and estimated acres for each alternative.

Table IV-8. Research Natural Areas - Clearwater National Forest

Alternatives:	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)
No. of RNA's:	1	1	9	9	9	9	9	9	9	9	9	10
Total RNA Acreage:	1,281	1,281	5,167	5,982	5,982	5,982	8,982	5,317	8,982	8,982	5,982	9,636

Table IV-9 lists the habitat types that have been assigned through the Northern Regional Guide as the Clearwater National Forest's objectives for RNA (Research Natural Area) recommendations and how those objectives are met by the Preferred Alternative. The table lists a candidate area(s) representative of each assigned type. Establishment reports will be prepared during the first decade for each candidate area prior to official classification as an RNA. For habitat types under investigation, the Forest will review opportunities for natural areas on National Forest System lands that would meet the Clearwater National Forest's objectives for research natural areas, and after reviewing the opportunities, candidates will be selected.

* Research Natural Area objectives for the Clearwater National Forest are displayed in the Northern Regional Guide and in the Clearwater National Forest Plan.

Table IV-9. Research Natural Area Objectives

Habitat Type Code	* Vegetative Habitat Type	** Occurrence	Existing (E) or Proposed RNA	Alternative K Total RNA Acres
260	Psme/Phma	Major	Lochsa (E)	1,281
			Aquarius	3,900
			Bull Run	373
520	Abgr/Clun	Major	Lochsa (E)	1,281
			Aquarius	3,900
			Bull Run	373
530	Thpl/Clun	Major	Lochsa (E)	1,281
			Aquarius	3,900
			Bull Run	373
* 530	Thpl/Clun (Mid-Elev., High Prod., Old Growth)	Major	Four-Bit	330
540	Thpl/Atfi		Lochsa (E)	1,281
			Aquarius	3,900
550	Thpl/Opho		Aquarius	3,900
620	Abla/Clun	Major	Sneakfoot Meadows	1,870
670	Abla/Mefe	Major	Sneakfoot Meadows	1,870
			Steep Lakes	784
680	Tsme/Mefe	Major	Steep Lakes	784
690	Abla/Xete	Major	Steep Lakes	784
			Sneakfoot Meadows	1,870
710	Tsme/Xete	Major	Steep Lakes	784
840	Tsme/Luhi	Minor	Steep Lakes	784
	Alru		Lochsa (E)	1,281
			Aquarius	3,900
	Bepa		Dutch Creek	190
	Alpine Types	Major	Analyze and select 1 or more of 3:	
			Fenn Mountain	318
			Rhodes Peak	318

(Table IV-9 cont.) Research Natural Area Objectives

Habitat Type Code	* Vegetative Habitat Type	** Occurrence	Existing (E) or Proposed RNA	Alternative K Total RNA Acres
			Graves Peak	318
	Fevi	Minor II-13	Bald Mountain	370
	Type I & II Streams		Lochsa (E)	1,281
			Sneakfoot Meadows	1,870
			Steep Lakes	784
	Waterfalls		Chateau Creek	220
	Cold Springs		Lochsa (E)	1,281
			Aquarius	3,900
	Rivers		Lochsa (E)	1,281
			Aquarius	3,900
	Permanent Ponds		Steep Lakes	784
	Average Production - Potential Lake		Steep Lakes	784
	Lakes with Fish		Steep Lakes	784
	Lakes without Fish		Steep Lakes	784
	Lakes with Special Fish Populations (Golden Trout)		Steep Lakes	784
	Fresh Marsh-Shallow Emergent Vegetation		Sneakfoot Meadows	1,870
	Bog Meadows		Sneakfoot Meadows	1,870
	Wet Meadows		Steep Lakes	784
	Thermal Springs		Several candidates being analyzed	

* Vegetative Habitat descriptions are abbreviations of species names.
** Minor or major representative in a zone.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - The timber productivity of resources is maintained but the opportunity to make the area more productive through intensive management is foregone. While nondevelopment maintains the opportunity for semiprimitive recreation, it is also important in the maintenance of old-growth timber and its associated wildlife habitat. Natural-appearing landscapes are preserved, although the opportunity for more intensive wildfires is increased by the build-up of fuels.

Irreversible and Irretrievable Commitment of Resources - Timber harvest opportunities are foregone. That amount of timber volume is lost to mortality.

Adverse Effects Which Cannot be Avoided - RNA designations also limit mineral exploration and development because of access difficulty. Many types of wildlife and fish habitat improvements may be impossible or expensive to accomplish. Control of insects, disease, wildfire, and noxious weeds, in most cases, will be more difficult and costly.

Conflicts with Other Land Management Plans - None identified.

G. THREATENED AND ENDANGERED PLANT AND ANIMAL SPECIES

Summary of Changes Between Draft and Final

1. A formal consultation was completed by the U.S. Fish and Wildlife Service and no major adverse conflicts or problems were identified.

2. The rare plant Dasynotus Daubenmirei will be administratively protected through designation of a special botanical area.

Environmental Consequences

Four threatened or endangered animal species, the gray wolf, grizzly bear, peregrine falcon, and the bald eagle, or their habitats may be found in the Clearwater Forest. A complete discussion of these species is in Chapter III. In addition, Clearwater stocks of chinook salmon and the Coeur d' Alene Salamander continue to be evaluated for possible listing under the Endangered Species Act.

Small numbers of bald eagles inhabit the Forest during the winter. Nearly all of the Forest's eagle habitat is associated with third and fourth order drainages and corresponding riparian habitat. This habitat is located primarily along the Clearwater and Lochsa Rivers. No bald eagle nest or communal roost sites have been identified.

Field evaluations conducted on the ground by U.S. Fish and Wildlife Service and Forest Service Biologists have determined that essential peregrine falcon habitat does not exist in the Clearwater (Gore, 1984).

The Clearwater is recognized as having habitat with a very high potential for recovery of the gray wolf because of the large undeveloped areas and prey provided. Approximately one hundred and seventy wolf sighting reports are on file with the Forest and the U.S. Fish and Wildlife Service.

The Selway-Bitterroot Wilderness is identified as a grizzly bear ecosystem in the U.S. Fish and Wildlife Service Grizzly Bear Recovery Plan. Historical evidence exists that grizzlies once occupied other portions of the Forest. Reports over the past ten years indicate that a small number of grizzlies may occupy the Bitterroot Range in the North Fork of the Clearwater and upper Kelly Creek basin. The Forest will be evaluating the habitat in this area to determine if a sufficient amount of the components important to grizzly bears are present to consider this area as potential recovery habitat. The Forest periodically receives unconfirmed reports of grizzlies sighted in other areas of the Forest as well. The Forest will conduct and coordinate a cooperative survey and habitat identification project in FY 85. Utilizing this data and continuing an informal consultation process with the U.S. Fish and Wildlife Service during project implementation should adequately protect the grizzly bear and positively promote its recovery.

No alternative is expected to affect the wintering habitat of the bald eagle. Visual quality objectives along the Clearwater and Lochsa rivers will provide ample opportunity to coordinate any timber management activities while protecting bald eagle roost or perch sites. The remainder of the bald eagle essential winter habitat is found within Wilderness or along designated Wild and Scenic Rivers.

Recovery of viable numbers of gray wolves is thought to show high potential in the Clearwater. The minimum goal established for the Forest by the Northern Regional Guide (1983) is ten wolves. This number of animals would consume approximately 50 elk per year. All alternatives would exceed this prey base requirement by a substantial margin. Wolf recovery is also dependent upon security areas where encounters with man are minimized. Such areas are thought to encompass 100 to 150 square miles (64,000 to 96,000 acres), per wolf, in which vehicle access is restricted. Such a territory may encompass vastly different types of terrain and vegetation (Herman and Willard, 1976). It was originally believed that the combination of wilderness, roadless type prescriptions and areas being managed to provide for 75 percent of potential elk would be more than adequate to meet the ten animal goal in all alternatives. However, under further analysis, Alternatives B and C can support only 6 and 8 wolves, respectively. Table IV-10 below shows the estimate of potential wolf production for all alternatives based on further analysis.

Table IV-10. Estimated Number of Gray Wolves

	Alternatives/Benchmarks													
	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
Wolves	10	6	8	14	15	15	16	13	18	20	15	16	5	20

To the extent that undeveloped lands adjacent to existing wilderness are developed, it becomes increasingly difficult to manage for recovery of the gray wolf except in those areas that maintain adequate security areas for big-game (i.e., those areas managed at least 75 percent potential elk use).

No plant species found within the boundaries of the Clearwater National Forest have been classified as threatened or endangered. One plant, Dasynotus daubenmirei, is on the Federal watch list. This designation means that the plant occurs in a relatively small area and will require monitoring to assure that it does not become sensitive, endangered or threatened. The area containing this species has been designated administratively as a botanical area.

Chapter III contains a number of plant species of special concern which could become threatened or endangered if their habitats are altered.

Threatened and endangered species can be managed in conjunction with other resources with positive results. Restrictions on developmental activities in terms of season of use, silvicultural systems, slash treatment, scheduling, spatial arrangement of roads and units, and aggressive road closure policies require innovation and planning, but are considered not to be feasible but essential to our overall goal of multiple use management and recovery of threatened and endangered species.

Protection for threatened and endangered species can effect timber, range, and mineral outputs and, in turn, PNV. Protection of these species is regarded as an important component of Net Public Benefits for each alternative. As more specific information is gathered regarding implementation of the Forest Plan and the scope of individual projects, impacts on threatened and endangered species will be re-evaluated and changes necessary to prevent adverse affects will be made. The U.S. Fish and Wildlife Service were consulted between the Draft and Final and will be informally consulted throughout implementation. Formal consultation will occur if an activity may affect a species or its habitat.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - The only short-term use is the continued monitoring and gathering of information to further clarify the status of threatened and endangered species and their habitats. Management of bald eagles is not now expected to affect long-term productivity; most of this habitat is either on unsuitable land or land already classified as wild and scenic river corridors. Management for gray wolves is not expected to affect the inherent productivity of the land because there are other land management objectives, such as maintenance of water quality and key elk habitat, that provide more habitat than is required for minimum objectives in most alternatives.

Irreversible and Irretrievable Commitment of Resources - There is no irreversible or irretrievable commitment of resources, unless there are conflicts between man and wolf or bear, in which case they would be resolved in favor of the animals. In extreme cases, removal of improvements such as campgrounds would represent an irretrievable commitment of resources.

Adverse Effects Which Cannot Be Avoided - There are no adverse effects associated with managing, monitoring or gathering information on threatened and endangered species.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls- No conflicts are expected with regard to monitoring or managing for wintering bald eagles. With regard to managing for recovery of the Rocky Mountain gray wolf and possible grizzly bears, close coordination with access and timber management is expected on about 950,000 acres. No conflicts with land management plans on lands adjacent to the Forest are anticipated.

H. WILDLIFE HABITAT IMPROVEMENT

Summary of Changes Between Draft and Final

A major change for the Preferred Alternative K when compared to Alternative E is the decrease of winter habitat improvement in Management Area C3 from 3,900 acres per year to 1,300 acres. The original acres would have produced more acres of rehabilitated browse in a short time than would be needed. Reducing the acreage would provide a more even supply of browse that in the long term would produce more elk. As a result of the reduced prescribed fire, the potential elk population drops in the first decade but starts increasing at the beginning of the second decade which meets the Idaho Fish and Game Department's goal of 19,900 elk. This program was reduced and changed in response to public input and concerns of the Idaho Fish and Game Department and Forest personnel that the Draft proposed program was too large and costly to accomplish based on our past performance.

Alternative K (Preferred Alternative) increases the acres of winter range habitat Management Area C4 when compared to Alternative E. Alternative E has 75,530 acres in C4 and the Preferred Alternative K designated 94,000 acres in this Management Area. The increase is due to a result of maintaining the suitable base at 988,000 acres along with other changes in model assumptions between the DEIS and FEIS.

Environmental Consequences

Summer burning has also been emphasized over spring burning to accomplish browse improvement, mainly because it will be easier to find the proper conditions to burn to achieve desired results.

Activities specifically conducted to maintain or increase the quantity and quality of palatable forage on big-game winter range include prescribed burning; seeding or planting of grasses, forbs or shrubs; slashing of trees and/or brush (with and without burning); fertilization; and timber harvest. Prescribed fire and timber harvest are the main activities, and are further discussed in those sections of this chapter. The acreage of prescribed burning on winter ranges that will result in improved habitat conditions is shown in Table IV-11.

Prescribed burning and other methods of habitat rehabilitation and improvement are directed primarily at elk. It is known that other species such as mule deer and moose can also benefit from improved winter range habitat. The numbers of either of these species is very low compared to elk. It is known also that moose are much less restricted during winter even during heavy snow years.

Habitat improvement, on the other hand, for white tailed deer on the Palouse District and lower elevations on the Lochsa District consists of timber harvest and in general does not need to be done as direct habitat improvement work.

Table IV-11. Elk Winter Habitat Scheduled for Burning (acres) (average annual)

	Alternatives/Benchmarks												
	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
All Decades	4182	2732	3188	3471	3438	3335	5388	2808	1424	218	3471	1300	105	0

Spring and fall burning is scheduled for all big-game winter range except that found in existing wilderness, riparian areas, and roaded commercial forest on nonbreaklands. The amount of burning required is dependent upon the elk objectives for each alternative. Alternative K (Preferred Alternative) was developed utilizing summer-fall burning along with spring burning to achieve elk habitat objectives while the other alternatives assumed spring burning. The main reason we reduced acres of burning in the Preferred Alternative K was in response to public comments, specifically those of Idaho Fish and Game. They were concerned that the proposed program was too large and could not be accomplished. The 1300 acres proposed for the Preferred Alternative K is a more realistic proposal. Even though these acres are not directly comparable, it can be seen that those alternatives that emphasize the amenities including big game needs as Alternative D, E, F, and J have a higher amount of winter game range burning. Alternatives B and C on the other hand de-emphasize wildlife and favor commodity production. Early decade elk populations are still high even under these alternatives, primarily because of the large amount of timber cutting on the winter range.

The idea of summer fall burning is relatively new. Spring burning although generally safer, i.e., less chance of becoming destructive to nontargeted areas is difficult to achieve because of adverse weather conditions. Numerous rain storms and greening up limit the "window" in which spring burning can be accomplished.

Summer-Fall burning, on the other hand, may be riskier in terms of becoming uncontrollable. It is hoped, however, that planned objectives can be achieved easier and with adequate precautions, risks can be minimized. Soil loss may be higher however than during spring burns (Leege, 1972, Jenni, Russell, Wilson 1973)

Habitat rehabilitation through timber harvesting will be done on all areas identified as being suitable for timber production and is currently stocked with timber. One problem with this type of management is that it is dependent to a large degree on the of the timber markets and related economics of timber demand. The cost of harvesting most of these steep generally unstable breaklands is usually much higher than other land types in the Forest. Also, funds for habitat improvement can be collected through the K-V Act from timber sales to finance additional habitat improvement work.

Shrub, grass and forb seeding or planting and fertilization are more opportunistic than planned. These activities are generally pursued on relatively small areas where some disturbance has eliminated or reduced the natural ground cover. Effects of these activities are mostly positive in that soils are protected, forage is produced and the visual aspect is improved. Effects of these activities will be more fully explored by individual analyses as projects are proposed.

Other activities which improve or degrade wildlife habitat are associated with timber harvest, road construction and management, and livestock grazing. The effects of these other activities on wildlife are discussed in the appropriate sections of this chapter. Slashing of trees and shrubs should have no lasting effects on any other resource. Shrubs sprout readily and grow rapidly, hiding visible scars and ameliorating visible impacts. Subsequent burning of slashed areas will result in about the same impacts as burning without slashing except that, with more fuel available, the burn will be somewhat more intense.

Production of optimum levels of forage for wildlife, especially on winter range, will affect the levels of resource outputs for timber and range, which will reduce opportunities for managing these resources. PNV is also reduced since the priced value of timber on these lands is higher than the increased value of wildlife. Supplying suitable habitat for wildlife is an integral component of Net Public Benefits.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Prescribed burning or slashing (or both) retains the vegetation in an early stage of plant succession. The relationship between artificially maintaining an area in an early stage of plant succession for extended time periods and its effect on long-term productivity is speculative at this time. The practice may eventually alter soil and water flow characteristics and may affect long-term productivity of the soil. On those lands where elk habitat is managed to achieve at least 75 percent potential habitat use, timber sales and entry schedules are likely to be affected. On the other hand, effective scheduling may allow sequential burning of brushfields followed by artificial reforestation. The result is maintenance of adequate forage as well as production of timber in future years. Such potential will be explored in separate analyses.

Productivity of grasses, forbs and shrubs on winter ranges is reduced more rapidly when timber regeneration is accomplished through artificial planting rather than natural regeneration. Planting returns the site to timber much more quickly than natural regeneration which in turn results in a more rapid loss of productivity of grasses, forbs and shrubs.

Permanent browse burning reduces or eliminates the potential timber productivity of a site when it is suitable for timber production. Maintaining sites in the forb-brush stages of vegetative succession for an extended period of time will eliminate the timber production on the site.

Irreversible and Irretrievable Commitment of Resources - Prescribed burning does not constitute an irreversible commitment of resources. However, because prescribed burning maintains early plant succession, any species removed or suppressed by prescribed fire constitutes an irretrievable loss of that resource.

The timber volume that could be produced on those sites that will be maintained permanently in brush is irretrievable.

Adverse Effects Which Cannot Be Avoided - The soil surface will be exposed by burning for a few days or weeks and there is varying risks of accelerated erosion (slight risk for spring burning and higher risk for summer/fall burning). Project analysis of the proposed burn areas should identify the restrictions needed to minimize this problem. Air quality degradation is similar to that from slash burning but the acreage proposed for burning is small and smoke generation will be slight. Air quality standards will be met. The blackened areas from burning will create a visual nuisance for short periods of time (as will the dead vegetation resulting from slashing), especially along frequently traveled roadways, but these visual effects will be rapidly reduced due to quick regrowth of vegetation. Some short-term surface soil erosion may result from constructed fire control lines.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls- Idaho Fish and Game has responsibility for managing animal populations, while the Forest manages the habitat. Since the Forest is also responsible for managing other uses on wildlife habitat. For example, Management Area C4 is managed for timber and big-game winter habitat. Standards within this and other Management Areas have been developed, however, that minimize potential conflicts. Site specific conflicts may have to be resolved at the project level.

I. FISH HABITAT IMPROVEMENT

Summary of Changes Between Draft and Final

There are no changes between the Draft and Final.

Fish habitat improvement for the Preferred Alternative K is shown in Table IV-12.

Environmental Consequences

The Clearwater National Forest has the potential to supply a significant number of anadromous fish to the Columbia River system. The Forest produces approximately ten percent of all summer steelhead and spring chinook which migrate above Bonneville Dam. With this high production, it becomes extremely important to protect the habitat which supports these fish. Past management activities have not always been sensitive to fish habitat needs. This was due, primarily, to a lack of understanding of the relationships between these activities and fish habitat, which became clear only after research in the late 1970's. As a result, some streams now suffer reduced potential production. The major problems are excess sediment from new road construction and logging, and removal of habitat structure and diversity through placer mining and timber harvest.

Excess sediment delivered to fish habitat is caused primarily by road construction and to a lesser degree by timber harvest (Megahan, 1972). This excess sediment affects fish by reducing available space for rearing and by degrading spawning gravel quality which, in turn, decreases egg to fry survival

(Stowell et al., 1984). In general, the more sediment produced, the greater the reduction in potential fish habitat capability. Maintenance of fisheries by controlling excessive sedimentation from roads and timber harvest (mitigation) is discussed in the road and timber harvest sections of this chapter. The fishery management objectives are the primary controlling factors on timber harvest levels and road construction in the first two decades in all alternatives except K. Spatial fitting of clearcuts is equally constraining for Alternative K (Preferred Alternative).

The remainder of this section will discuss the effects of fish habitat improvement practices on the environment.

Numerous activities are proposed to improve and/or enhance degraded fish habitat. In most alternatives, a substantial budget item is proposed for this activity. All habitat improvement measures are designed to increase production of wild and natural stocks of fish. No measures are considered which deal with artificial fish production, which is the responsibility of the Idaho Department of Fish and Game and the Fish and Wildlife Service at Dworshak (Orofino) and Clear Creek (Kooskia). The Forest's responsibility is to maintain habitat for natural production, and this is important both for total fish yields and for future hatchery stocks.

Specific projects to improve and enhance fish habitat involve limited sections of individual streams and, on the whole, have little effect Forestwide. Some natural barriers to fish passage will be removed. There is limited opportunity to do this type of enhancement work, so environmental effects will be inconsequential. Other project measures will include bank stabilization, revegetation of riparian areas, improvement of pool-riffle-run ratios, addition of debris where lacking, and removal of sediment from critical spawning areas.

These specific measures do have a short-term negative effect on the water quality of the immediate site, but through extensive use of these management techniques, a very positive effect on fish migration, spawning, and rearing can occur. Each project will be evaluated under NEPA procedures and cumulative effects on fish production and watershed quality will also be analyzed. Table IV-12 shows the average annual acres of improvements by alternative.

Table IV-12. Acres of Fish Habitat Improvements by Alternative

	Alternatives/Benchmarks													
	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
Acres of Hab. Impv.	0	438	438	219	219	219	110	219	110	43	219	219	438	0

The alternatives with the highest amounts of fish habitat improvement are Alternatives B and C which are also the highest timber producing alternatives. The reasons for highest fish habitat improvement are:

1. More funding would be available for these projects because of additional KV funds available from cutting of timber.

2. More mitigation for the adverse effects of building roads and harvesting timber is necessary.

Watershed improvement projects although not discussed in this section may also benefit fish habitat.

The alternatives with the lowest recommended direct habitat improvement are those with the lowest proposed timber harvest.

Those alternatives that have the highest timber harvest (B and C) also require the most habitat work, expend the most funds, and affect the PNV the most. Actual effects, however, compared to total forest budget are minimal.

All habitat improvement is scheduled in the first decade. Only minor work will be required in subsequent decades to maintain improvements.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Projects associated with increasing fish passage or rearing capacity will insure that fish will be able to occupy either presently unavailable or degraded habitat. Fish habitat will be maintained and enhanced above the present level in many areas.

Irreversible and Irretrievable Commitment of Resources - There are few irreversible or irretrievable commitments of resources associated with fish habitat improvement projects.

Adverse Effects Which Cannot Be Avoided - Stream bottoms will be disturbed when fish habitat improvement measures are implemented. This may have minor short-term effects on the fish and aquatic organisms which occupy these areas, but this fact is more than outweighed by the long-term positive benefits which will accrue to the fisheries resource.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls- All fish habitat improvement projects are closely coordinated with the Idaho

Department of Fish and Game, State Department of Health and Welfare, Idaho Department of Water Resources, and the Nez Perce Tribe. No conflicts exist because the goal of the Forest as well as these other agencies is to improve fish habitat.

J. MINERALS

Summary of Changes Between Draft and Final

There were no changes between the Draft and Final EIS. The appropriate tables in other chapters were changed to reflect the addition of the Preferred Alternative K.

Environmental Consequences

The potential for locatable mineral production is moderate. At present, almost all activities are centered around gold deposits and are conducted in such a manner that usually no more than five acres per site are impacted. Although exploration in broad areas may encompass more than five acres, the accumulated impact per operation is still less than five acres. Interest in gold placer and lode deposits occurs primarily in the Orofino Creek, Lolo Creek, Orogrande Creek, Kelly Creek and upper North Fork areas. Extensive claiming is being done in other drainages, but work on them is minimal.

Mining activity is primarily in locatable minerals. Approximately 3,000 mining claims are currently located in the Forest. Mining claims have historically been filed for 28 different minerals. However, the vast majority of all claims were, and continue to be, located for gold. Activity on about one-half of the claims have traditionally not gone beyond the prospecting stage. Of those that have, about one-half have been placer operations, one-third underground operations, and the balance surface operations.

The demand for gold is high and exploration interest is also high as evidenced by the number of operations the Forest works with. In 1985, the Forest processed 126 operating plans and notices for mining-related activities. Due to the good access, an increasing number of "recreational miners" are working numerous creeks where past activity has indicated gold potential. Although some operations are progressing toward development and production, it is uncertain if the minerals potential will fully support all the current interest.

Placer mining activity in the late 1800's and early 1900's impacted some streams and rivers. Some large scale dredge-mining took place as late as the 1930's. The amount of sediment in a stream above the natural rate is directly related to fish habitat loss (Stowell et. al., 1984) and degraded water quality. These past mineral activities still have singular and cumulative impacts on the environment even though they are insignificant in total. These impacts are not included in any sediment yield predictions that are displayed in this chapter. (See Roads Section). However, it should be recognized that potential exists for significant adverse impacts.

Mining-related activities associated with significant discoveries might include one or more of the following: construction of access roads; earth-moving impacts from heavy equipment such as bulldozers and backhoes for exploration trenches; pads and mud pits for drills; construction of portals and shafts; mine and mill buildings; tailings and settling ponds; water impoundment sites; and power corridors. Very little mining-related new road construction has occurred in the last five years. About 50 acres of ground-disturbing activity occur annually as a result of mining-related needs. All significant activities will be in accordance with an approved plan of operation (36 CFR 228, Subparts A, B, and C).

All minerals-related activities are fully evaluated under NEPA procedures to determine the impacts on the environment and if the nature of the operation justifies those impacts. Placer mining has the potential to cause the most environmental damage. Because of the need to conduct such operations in environmentally sensitive waterways and wetlands, water quality and fish habitat may be severely impacted and degraded. For instance, fish habitat in the form of

pools that are created by boulders and debris, and overhead cover that is provided by riparian vegetation can be directly impacted by minerals activity in streams. However, seasonal suction dredging in streams damaged by other management activities and past mining can be beneficial by cleaning the silty gravels and creating sediment free pools.

Sediment from access roads and from mine area drainage into mining areas may also contribute to a reduction of water quality and a loss of fishery habitat. These operations directly affect up to 300 yards of stream channel, primarily by authorized stream diversions. Effects of these operations may be extensive downstream. Effluent discharge directly into the stream is usually limited by use of settling ponds. Unanticipated problems from such activities can create severe impacts depending on the size of the stream. Occasional discharge directly into streams may occur from breached settling ponds and uncontrolled waterflow through work areas.

There are no known geologic environments favorable for energy mineral development, although the Forest has five oil and gas lease applications totaling 43,563 acres on the Kelly Creek District. The presence of a number of undeveloped hot springs scattered throughout the Idaho Batholith portion of the Forest indicate a low potential for geothermal resource development for energy related purposes. This potential has not yet been investigated.

The probability of a significant discovery presently appears to be low. If a significant discovery and development of mineral/oil and gas resource occurred, it could have a significant effect on the physical, biological, economic and social environment. Vegetation and soils around mines, tailings, disposal sites, settling ponds, mill facilities, well-head locations, waste deposits and access roads would be drastically affected. Water quality could suffer. The influx of people would cause a change in lifestyle and have an impact on local schools, police, and other community organizations and facilities. Impacts to wilderness or areas designated to provide primitive or semiprimitive recreation could be severe. See Appendix C for specific discussion of potential mineral impacts on inventoried roadless areas.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Any exploration and development of the mineral resource is likely to have an effect on the vegetative productivity of the specific sites. In the short term, disturbed sites are unlikely to be as productive as they were before the disturbance. In the long term, however, disturbed sites may resume near normal productivity, dependent on the nature of the disturbance and reclamation techniques used. Claim staking and mineral leasing, in themselves, would not affect productivity.

Irreversible and Irretrievable Commitment of Resources - Claim locations and mineral leasing are not an irreversible commitment of a resource since they are not automatically subject to exploration. Once exploration and development of the resource occurs, the effects are irreversible. Although such sites may be rehabilitated, the vegetation lost while the development was in place is irretrievable as is the mineral, oil or gas removed from the area.

Adverse Effects Which Cannot be Avoided - There are no adverse effects associated with claim staking or mineral leasing. Where there is exploration or development, there are unavoidable surface impacts from increased use of existing roads, construction of new access routes, and use of the surface directly associated with the mining activity. Soil, water, fisheries, wildlife, and the visual resource are adversely impacted from such activity. Efforts are made to insure that the long-term effects are minimized; however, reclamation is often difficult to achieve. Vegetation is impacted for the short term and reclamation efforts include re-establishing that resource. Where mining activity has caused the removal of merchantable timber, that timber is either used in the operation or sold. Mining claims conflict with scheduled timber harvest and management activities when they occur on lands managed for timber.

Conflicts with Objectives of Other Land Management Plans, Policies and Controls- Locatable minerals development may take precedence over other activities because of applicable law and regulation; because of this, conflicts are possible with all other land and resource management plans. Standards have been developed to minimize these conflicts, however.

K. SOCIAL AND ECONOMIC IMPACT

Summary of Changes Between Draft and Final

The only changes made between the Draft and Final apply to the Preferred Alternative K which is shown in Table IV-13.

Environmental Consequences

Forest activities have an effect on regional and local communities. One impact is the total number of jobs created and resultant income in the local area. The more timber and other commodities produced the more jobs and income generated. Nonmarket outputs like wilderness recreation, hunting and fishing also produce jobs. However, these jobs are often seasonal and the pay level is lower. For example, Alternative B which produces high amounts of market goods produces an average of $20,160 of income per job created in the first decade. Alternative I which produces high amounts of nonmarket outputs produces an average of $18,670 per job created. Table IV-13 shows jobs and income by alternative for the first and fifth decades. (For more specific information on how these figures were derived see Section V of Appendix B.)

Table IV-13. Forest-Related Employment and Income for Alternatives and Benchmarks

Alternatives	Jobs		Income (M$)	
	Decade 1	Decade 5	Decade 1	Decade 5
A (cd)	3383	6498	66540	128963
B	3923	7491	79102	152620
C	3770	7218	75565	146113
D	3340	6373	65498	126033
E	3132	5992	60627	117063
E1	2979	13292	56863	287722
F	3132	6007	60648	117407
G	3514	6777	69454	135243
H	2897	5549	55216	106168
I	2638	5064	49254	94527
J	3340	6378	65505	126109
K (pa)	3395	7475	67082	152916

Full time Forest Service employees live and work in and near the Forest. In summer, this number is supplemented by seasonal employees.

The job force of the Forest forms a portion of the economic base (Table IV-14), and Forest outputs provide five percent of the total income in the regional area. Forest Service employees and their families play a role in community affairs by belonging to various social, cultural, and religious groups.

Maintaining the current mix of goods and services provided helps to stabilize social conditions. While these factors can all be viewed as positive effects of Forest management, certain negative effects may also be produced. PNV is limited where resource outputs are constrained to maintain the current situation or other objectives. Some alternative actions favor amenity-oriented values, while others tend to favor commodity outputs.

Table IV-14. Forest Service Employment Average Annual, First Decade (person years)

	Alternatives/Benchmarks													
	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
WYE *	448	463	459	447	443	439	444	453	438	432	447	447	487	53

* Work Year Equivalents - All part time and temporary employment categories are aggregated into full work years for this display.

Predicted returns to the U.S. Treasury and local governments for each alternative were calculated to show the effects on revenue programs administered by the Clearwater National Forest. These returns illustrate the impact of management on both Federal Government receipts collected as a result of revenue producing programs, and the change in revenues passed on to local government. Table IV-15 shows returns to U.S. Treasury and local governments for each alternative in the first and fifth decades.

Table IV-15. Returns from National Forest Programs

Alternatives (Units M$)	Returns to Local Counties		Returns to U.S. Treasury	
	Decade 1	Decade 5	Decade 1	Decade 5
A (cd)	3922	24090	15686	96361
B	4650	29173	18598	116691
C	4377	28030	17506	112119
D	3850	23367	15400	93466
E	3541	21169	14165	84674
E1	3113	57428	12451	229712
F	3489	21621	13955	86485
G	4170	25346	16681	101385
H	3024	18682	12094	74728
I	2524	15466	10095	61863
J	3845	23349	15380	93397
K (pa)	3582	27064	14328	108256
M.PNV	6771	34476	27083	137904
MNLV	2	2	6	9

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Those alternatives requiring the highest levels of commodity outputs require a larger work force to produce them. One of the goals of the Forest Plan is to maintain long-term productivity. No short-term management actions should have negative effects, as long as long-term productivity is not seriously impaired.

Irreversible and Irretrievable Commitment of Resources - None identified.

Adverse Effects Which Cannot be Avoided - None identified.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls- None identified.

L. SPECIAL USES

Summary of Changes Between Draft and Final

There were no changes.

Environmental Consequences

The Forest administers special use permits affecting outfitter and guide operations, roads, water transmission systems, and powerline and telephone line right-of-way. Future special uses may include several small hydropower projects.

Small hydropower projects have the potential of impacting essential habitat for wintering bald eagles and for causing barriers to movement of big-game animals and other large mammals.

The effects of existing and future special uses can be substantial. Dams, ditches, and penstocks may result in soil movement, displacement, and sedimentation. Ditches and penstocks remove water from stream channels, lower water levels can reduce or completely eliminate fish populations, affect riparian vegetation, and create stream channel instability. Vegetation behind dams and in ditch bottoms can be destroyed. Special use roads that access these projects have the same effects as other roads and are discussed in the Roads Section. The impact of buildings is discussed in the Facilities Section. Though the effects of the special uses can be drastic for a specific site, these uses are usually limited to a small acreage of the Forest. One project can significantly affect an entire stream system. If several small hydropower projects were constructed in a general area, they may have cumulative effects on fishery resources throughout a large drainage basin. Each request for a new permit is subjected to environmental analysis prior to issuance.

Special uses contribute to PNV because fees are collected from permittees, but these fees do not offset the administrative costs of the program.

Because lands designated for development are more accessible and less restrictive in many ways then unroaded land or wilderness, Alternatives B and C would provide the most opportunities for most special uses, while Alternatives H and I would provide the least opportunities. A few special uses such as outfitting and guiding for backcountry hunting, fishing, etc., are dependent on undeveloped country. Those alternatives such as B and C would significantly affect these uses.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - The vegetation on specific sites occupied by special uses is destroyed or altered. These effects will remain as long as the facilities remain.

Irreversible and Irretrievable Commitment of Resource - Dams, ditches, roads and other special uses will likely be maintained into the foreseeable future. The vegetation lost by their existence constitutes an irretrievable loss of resource.

Adverse Effects Which Cannot Be Avoided - Construction causes soil disturbances. Low stream flows may reduce fish populations, impact riparian areas, and affect stream channel stability. Some sites, such as power line and communication relay stations, are a visual impact. Permits are authorized following the environmental analysis process which analyzes potential impacts. If severe adverse impacts are possible, mitigating measure will be required prior to project implementation.

Conflicts with Objectives of Other Land Management Plans, Policies and Controls- Major conflicts are resolved or mitigated before issuance of a special use permit.

M. RIGHT-OF-WAYS

Summary of Changes Between Draft and Final

There were no changes between Draft and Final.

Environmental Consequences

Road and trail right-of-ways are acquired by the Forest from other owners in connection with the Forest's resource management program. Right-of-ways, on which roads are constructed, affect various amounts of private land each year.

To date the Clearwater has acquired 277 easements for road right of ways, and has granted 82 easements for road right of ways. Over the past 5 years the Clearwater has acquired an average of 15 right-of-way easements per year and has granted an average of 7 right-of-way easements per year. The Clearwater also has an annual workload of temporary acquisitions and grants for right of ways. Over the past 5 years the Forest has granted an average of 5 permits, licenses, or agreements per year for road right of ways. The Forest averages about 5 temporary acquisitions per year for road right of ways.

The Forest is actively involved with the major timber landowners in the Clearwater, Burlington Northern Railroad Co., Potlatch Corporation, and DAW Forest Products (formerly Diamond International), in a cooperative road right of way construction and use program (Cost Share). In this program the Forest has 7 Agreement Areas and over the past 5 years has averaged 12 supplements per year to the Agreements. Each supplement represents construction or reconstruction of jointly owned roads and/or the construction or replacement of major transportation structures such as bridges.

Because of the Forest's large mixed ownership pattern, the present trends can be expected to continue for at least the next 10 years. The majority of the Forest that would not involve mixed ownership is mostly wilderness (recommended and existing) and designated unroaded areas.

Those alternatives that have the highest timber harvests and road construction and least acreage of recommended wilderness and designated unroaded land (Alternatives B and C), would require the greatest number of right-of-way.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Right-of-ways give the Forest an opportunity to manage lands which might otherwise be unavailable. Productivity on these lands can be maintained or improved.

Irreversible and Irretrievable Commitment of Resources - Right-of-ways can be cancelled although this is unlikely to happen in the foreseeable future. The resulting road use and the vegetation removed during their construction and maintenance constitute an irretrievable loss of a resource.

Adverse Effects Which Cannot Be Avoided - Adverse effects of the resulting roads are discussed in the Road Section of this chapter.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls- Access to and within the Forest does not conflict with other plans in the area. Access to and within the Forest are planned to accomplish the objectives of land management plans, policies and controls in the area.

N. PROPERTY BOUNDARY LOCATION

Summary of Changes Between Draft and Final

There were no changes.

Environmental Consequences

Historically, about 48 miles of property boundary are located each year; this amount varies between alternatives according to the amount and location of timber harvest. The more timber harvest the greater the need for locating property boundaries. Alternatives B and C would provide the greatest workload in this area. The activity involves considerable manpower and time but has few environmental effects. Some vegetation may be trimmed or completely removed to establish line-of-sight for the survey instrument but this is inconsequential.

Boundary location establishes the property lines of Forest and other ownership. It enables all parties to avoid activities on lands they do not own. Location of boundaries does not significantly affect the economy of the area.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Boundary location has no effect on productivity.

Irreversible and Irretrievable Commitment of Resources - There is no commitment of resources associated strictly with boundary location.

Adverse Effects Which Cannot be Avoided - Some vegetation may be removed or pruned but the effect should be short lived.

Conflicts with Objectives of Other Land Management Plans, Policies and Controls - None identified.

O. LAND OWNERSHIP AND ADJUSTMENT

Summary of Changes Between Draft and Final

There were no changes.

Environmental Consequences

There are approximately 145,000 acres within the Forest boundary that are in private ownership. This is in railroad grant ownership which forms a heavy checkerboard pattern on the Powell District, a concentration of railroad grants (which now belongs to DAW Forest Products Limited Partnership) in the Moose City

area of the Kelly Creek District, Potlatch Corporation ownership in the Clarke mountain area of the Pierce District, and the intermingled ownership pattern that characterizes the Palouse District (68,000 acres of the total private land in the Forest boundary).

Intensive timber management on many of these private parcels has resulted in heavy impacts to various components (elk, fish, watershed, visual resources, etc.) in the included ecosystems. Because the Forest Service is legally required to maintain the productivity of all resources under its administrative control, the agency must adopt conservative management strategies to mitigate for many of these environmental impacts beyond its control. Areas with cultural resource significance will not be transferred to private ownership if that transfer would jeopardize the cultural resource values.

The basic philosophy for land adjustment is that inholdings will be acquired to protect resources or enhance program development on adjacent National Forest land. Tracts no longer suitable for National Forest purposes will be exchanged. The Northern Regional Guide (signed June 10, 1983) provides additional direction for National Forest land adjustment. Under the Regional Guide, private land within recommended wilderness and designated unroaded areas are higher priority to acquire. Alternatives G, H, and I would provide the most opportunities to acquire land through this means.

Ownership consolidation is presently being considered on the Pierce, Kelly Creek and Powell Districts to protect critical watershed components. This would protect valuable water resource and fisheries assets, protect and manage important historic values within the Lewis and Clark Trail Corridor, and protect classified recreation river values on the upper Lochsa River.

A complete land ownership adjustment program has been prepared and is being implemented as part of the final Forest Plan.

Short-term Use vs. maintenance and Enhancement of Long-term Productivity - Lands which enter private ownership following exchange will be managed as the new owner desires. Lands obtained by the Forest Service through exchange will be integrated into the appropriate multiple uses designated for the area.

Irreversible and Irretrievable Commitment of Resources - Lands entering private ownership through exchange are committed to whatever the new owner desires.

Lands obtained by the Forest Service will generally be committed to those uses germaine to the particular management area enclosing or adjacent to the acquired lands, except for outstanding rights to third parties, and reservations to the United States, which would allow for protection and administration of specific resources by the United States after exchange of the land.

Adverse Effects Which Cannot be Avoided - The disposition of National Forest land will result in loss of public control over fish and wildlife habitat, water quality, and public access (variable). Acquisition, on the other hand, will restore public control of these resources and use.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls- None identified. The disposition of National Forest land may conflict with Fish and Game management plans, Indian Tribes rights. Generally only in cases of condemnation would acquisition result in conflict with private party plans, policies or control.

P. BUILDINGS AND OTHER FACILITIES

Summary of Changes Between Draft and Final

There were no changes.

Environmental Consequences

The Clearwater National Forest maintains 4 Ranger Stations, 8 work centers, 11 fire guard stations, and 24 lookouts. There are 297 buildings, including 120 for housing and 82 for storage. The Forest has 63 buildings constructed before 1936, including 42 log structures, more than any other Forest in the Region. These log buildings are in varying condition: some have been renovated in recent years.

Construction causes some soil disturbance on the sites and water relationships for the specific sites has been severely changed because of the landscaping and maintenance. In some locations, the presence of buildings has changed the visual quality on all present facilities. Some of the sites can be important to the economy and social structure of communities since they are occupied part or all of the year by people administering Forest programs.

Overall, current buildings occupy less than 300 acres.

Those alternatives that provide for the most development for timber will result in the largest building programs. Development of roadless areas, for example, could require more work centers at centrally located sites. Increased harvests and road construction would result in more employees, hence more facilities to accommodate them.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Vegetative productivity will be lost during the life of the facilities.

Irreversible and Irretrievable Commitment of Resources - The vegetative productivity loss represents an irretrievable commitment.

Adverse Effects Which Cannot be Avoided - Although efforts have been made to landscape building sites, the presence of the facilities does affect natural appearance. Effects of soil disturbance will remain after the facilities are gone.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls - None identified.

Q. FIRE PREVENTION AND SUPPRESSION

Summary of Changes Between Draft and Final

There were no changes.

Environmental Consequences

The number of person-caused fires averaged 8 fires per year during the last five years. The number of lightning caused fires averaged 82 per year during the same period.

Fire prevention involves educational activities and enforcement of fire prevention laws and regulations. The prevention program has tended to make people, especially children, within the local communities aware of fires' destructiveness as well as its benefits when used as a management tool.

Increased recreation is projected. Under Alternatives B and C the timber harvest will substantially increase, and this will cause more workers and equipment to be in the woods. More cabins and houses are being built adjacent to National Forest land, primarily on the Palouse District. All of these increase the risk of person-caused fires, and higher material/resource losses.

Fire prevention activities take a small portion of the Forest budget. A reduction in fire prevention funding could result in catastrophic losses in resources and reduce priced benefits produced.

The purpose of fire suppression is to minimize resource damage by controlling and extinguishing fires. The extent of fire suppression activity is directly dependent upon fire starts, fuels, weather, and suppression forces. These factors are independent of the alternatives. Each alternative has certain fire suppression standards that may determine where and when fires will be suppressed. These fire management standards are discussed in more detail in the next section on Managed Fire.

Fire suppression can result in the establishment of old-growth timber stands. Old-growth dependent animals are favored and cover is provided to many wildlife species. Suppression of wildfire frequently leads to the development of stands with shade tolerant species (Spurr & Barnes, 1973). These stands can be classified as old-growth, but may not be as desirable for some wildlife species as those stands with large, individual trees of shade intolerant species (Thomas, et.al 1979). These types of stands have evolved and can survive periodic ground fires. Those alternatives with the most acres of recommended wilderness and unroaded management would theoretically result in the most acres of old-growth (H and I). See exceptions to this in the managed fire section where certain fires are allowed to burn in wilderness and unroaded management areas.

Fire suppression also results in fuel accumulations above natural levels which can lead to large, damaging fires when burning conditions are severe. Fires in dense, dry fuels consume litter and duff which can affect productivity and soil stability. Stream sedimentation is likely to occur after a hot litter- and humus-consuming fire (USDA Forest Service, 1978). If retardant falls into streams, short-term water quality effects may occur (Norris, Lorz and Gregory, 1983).

Fireline construction with hand tools or heavy equipment can increase the potential for soil erosion. The potential for soil movement is increased by use of heavy equipment on steep slopes or on soils susceptible to erosion. The sediment impacts from fire or firelines have not been included in the sediment predictions that are displayed in this chapter. (See Roads Section.)

Other than protecting human life and improvements minimizing damage to or loss of trees where they are being managed for timber production is the next most important aspect of fire suppression. On that basis, fire prevention and suppression efforts as well as costs will be highest under those alternatives with the highest timber outputs. In descending order of effort and cost would be Alternatives B, C, G, K (Preferred Alternative), A (current direction), D, J, F, E, E1, H, and I.

All alternatives except B and C provide for contain, confine, or control suppression strategies, depending upon the particular management area. Alternatives B and C require control for all suppression activities. Alternatives E, E1 and K (Preferred Alternative) allow for wildfires (unplanned ignitions) within certain management areas, that could not only be more cost-effective but could also achieve certain management area or Forestwide objectives.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Effective fire prevention and suppression will minimize damage to existing stands of timber and other resources. However, the long-term change in vegetative composition and density may reduce productivity.

Irreversible and Irretrievable Commitment of Resources - Since fire prevention and suppression activity could be curtailed at any time, there is no irreversible commitment of resources. Funds expended represent an irretrievable commitment of resources.

Adverse Effects Which Cannot Be Avoided - Short-term loss of soil due to construction of firelines will occur despite preventive measures. Buildup of fuels will continue in areas protected by fire suppression. Use of fire retardant and loss of soil may result in short-term water quality degradation.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls- None identified.

R. MANAGED FIRES

Summary of Changes Between Draft and Final

In the Preferred Alternative K, provision is made to allow unplanned ignitions (wildfire) to burn in certain Management Areas to meet prescribed burning objectives. Refer to Forest Plan, Appendix D, for a list of those areas.

Environmental Consequences

Managed fires are usually described as prescribed fires resulting from planned and unplanned ignitions. (See Glossary.) Planned and unplanned ignitions will be permitted within existing and recommended wilderness. (See Management Areas B1 and B2 in the Forest Plan.) Planned and unplanned ignitions will also be permitted in certain nonwilderness as long as the objectives for the particular management area are met. Individual on-site analysis will be conducted prior to and during fire activity to determine the appropriate actions to take.

The effect of this prescribed fire program will depend on factors such as fuel loading, proximity to valuable resources, and current weather conditions. Fires that occur on favorable habitat types tend to increase forage for big game by removing forest canopies for tall shrubs and encouraging forbs and low shrubs.

Fires increase vegetative and animal diversity and increase animal species that prefer early seral stages and decrease those that prefer dense forests. Accumulated fuels are consumed which will reduce the severity of future fires. Prescribed fires seldom burn both overstory and understory because the hotter fires are usually suppressed. Runoff due to exposed soils may result in lower water quality for a short period of time (sediment yield model). The duration and amount of soil loss depends on fire intensity and soil type on which the fire occurred. Fires may temporarily reduce visual and air quality.

Prescribed fire is often used to enhance the condition or type of forage for big-game. Priced benefits for big-game are increased. Total priced benefits, including market benefits for timber, are reduced due to the decrease in scheduling of timber harvests. Prescribed fire is desirable from a social standpoint, because maintenance or improvement of big-game and other wildlife habitat is a desirable objective for management.

Prescribed fire whether from planned or unplanned ignitions can also cause significant resource damage if they escape in which case the results are discussed under the Fire Suppression Section.

Alternative A (current direction) permits prescribed fires from planned ignitions in areas being managed for timber and wildlife. Unplanned ignitions are permitted in the Selway-Bitterroot Wilderness only. All other alternatives would permit unplanned ignitions in areas recommended for wilderness as well as the Selway-Bitterroot Wilderness. The Preferred Alternative K in addition to the above would provide for unplanned ignitions within those management areas not scheduled for timber production. This includes Management Areas A3, A7, C1, C3, C4, C6 and M5.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Allowing fires to burn can have long-term effects on the kinds of vegetation and animals occupying the area. Succession may be affected. Some of the present overstory, especially shrubs, is completely removed. The basic productivity is not destroyed and, in fact, may be temporarily enhanced by the availability of the minerals in the ash.

Productivity of a site can be substantially reduced if there is a large loss of surface soils due to wind or water erosion following fire. On some soil types burning can produce water repellant soils which result in a loss of site productivity.

Irreversible and Irretrievable Commitment of Resources - If a fire is allowed to burn, the consumed material is irretrievable.

Adverse Effects Which Cannot be Avoided - The aftermath of the fire will remain visible for a short time. Soil is bared and water quality may be reduced for a short time by the accelerated erosion. Because a prescribed fire can burn for long periods of time, air quality can be adversely affected during these times. The low intensity of such fires and remoteness of the areas in which they occur will reduce these impacts to some extent.

Conflicts with Objectives of Other Land Management Plans, Policies and Controls- None identified.

S. RANGE MANAGEMENT ACTIVITIES

Summary of Changes Between Draft and Final

There were no changes.

Environmental Consequences

Grazing in the Clearwater National Forest dates back to the early 1900's. This early use was mainly sheep. Grazing of sheep increased as a result of the historic fire years (and subsequent forage production) of that time and favorable markets. Use peaked in 1934 (Space:1981) and then rapidly decreased as encroaching reproduction, brush, and falling snags rendered the burn acres unusable.

Only about 1000 acres of the Forest is now considered permanent livestock range. Most of this is located on the Palouse District and consists of scattered meadows and grasslands. None of the existing allotments are being fully utilized. Range and recent economic conditions have forced permittees to discontinue use on some of the Forest's more remote and short-season allotments. Requests have been received to find substitute areas more accessible to base operations. The Forest has been able to do this in most cases. It is expected that this trend will continue with the demand for forage on the more accessible portions remaining high, while backcountry allotments are designated to other uses. Current use is about 16,400 AUM's, demand (projected use) is not expected to exceed 20,200 AUM's as shown in Table IV-16.

All of the projected use would be expected to be provided on permanent and transitory range within existing allotments.

Table IV-16.	Projected Grazing Use M AUM/Year				
	1	2	3	4	5
All Alternatives	16	17	17	18	20

In addition to current allotments, a large amount of potential grazing use could be provided on openings created by even-aged timber harvest units. This potential use varies by the amount of even-aged timber management permitted under each alternative. Potential grazing displayed in Chapter II, Table II-22 of the EIS shows the differences in projected and potential use. Even for Alternative I which recommends all 950,000 acres for wilderness, the potential grazing use exceeds the projected use or demand by 16,000 acres in the first decade.

Riparian areas and associated resources are affected by livestock grazing. These areas are usually grazed first, before livestock move to other areas. Riparian areas provide shade and escape from flies, in addition to water and forage. Where excessive livestock grazing occurs, vegetative ground cover may be reduced; soil compaction, overland flow, and soil erosion may occur; and streambanks may be broken down (Gifford, 1980; Platts, 1979). This results in increased sediment, nutrient, and bacterial levels in the water.

Grazing use in riparian areas can result in degradation of fish habitat. Direct damage to the fishery can occur through stream bottom disturbance, increased turbidity, and sedimentation (Peek and Dalke, 1982; Platts, 1979). Increased grazing pressure in site-specific cases would require management mitigation. Management direction and standards effectively mitigate this potential impact.

The impacts of grazing on riparian areas would be the greatest on those alternatives with the highest timber harvest levels. Timber harvest provides road access to more land and opens up more riparian areas to grazing by removing trees and allowing accelerated forage growth.

Livestock grazing may annoy some recreationists because of smells, flies, noise, and manure on trails and around campsites. Most of these conflicts will be in meadows and grasslands near level terrain and slow moving streams. Management of these areas is designed to maintain adequate vegetative ground cover. This limits livestock use in most areas to moderate grazing levels (35 to 40 percent use).

There are no livestock allotments on elk winter range.

On summer ranges, social competition between livestock and game rather than forage is considered the limiting factor, (Leege, 1984). Because livestock graze only a portion of the total elk summer range, the loss in potential summer range carrying capacity is negligible. Grazing in plantations can result in damage to young trees from trampling and hedging, therefore, in all alternatives, livestock will be excluded from areas containing young trees until those trees are large enough to withstand such impacts. This is in accordance with manual direction (FSH 2201.21, R-1 Range Analysis).

Water development, grassland burning, fencing, and noxious weed control activities may have effects on a site. Fencing is used to control the movement of livestock and to limit use in sensitive areas such as riparian sites. Fencing, in conjunction with pasture management, can limit use on particular areas but is also responsible for livestock trailing alongside fences. Fences can deter natural movement of wildlife and other users (snowmobiles and horseback riders).

Water developments are primarily used to help disperse livestock grazing to avoid overgrazing near other watering places. These water developments can also be used by wildlife and forest visitors

Direct management activities such as these will essentially involve the 1,000 acres of permanent range mentioned above. Their effects are expected to be negligible in relation to total Forest acres.

Grazing fees add to the PNV of the Forest. However, total contribution to PNV is less than one percent under any alternative.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Grazing livestock in all alternatives will have little effect on long-term forage productivity. A few areas near watering places and salt will continue to be overused which will change the vegetation production of these small areas.

Because the majority of grazing is transitory in nature, there are not expected to be any irreversible or irretrievable commitments of resources.

Adverse Effects Which Cannot Be Avoided - Riparian areas may be negatively affected by excessive livestock grazing. Grazing by cattle and horses in wilderness can have negative impacts on soil and water in localized areas, especially in riparian ecosystems. Cattle grazing may annoy some recreationists, and cause a decrease in quality of their wilderness experience. Horse grazing, while not as serious a problem, can also affect recreation in and around well-used areas as a result of overgrazing, soil compaction, and bacterial water contamination. By breaking down streambanks, increasing soil compaction, and reducing vegetative ground cover, sediment, nutrient, and bacterial levels in the water may be increased. Fishery habitat may be degraded by stream bottom disturbance, increased turbidity, and stream sedimentation. No significant impacts are expected to occur because of the relatively light use occurring and projected.

Conflicts with Objectives of Other Land Management Plans, Policies and Controls- None identified.

T. UTILITY TRANSPORTATION CORRIDORS

Summary of Changes Between Draft and Final

A potential major utility transportation corridor window has been identified in the Forest along the main ridge between the North Fork of the Clearwater River and the Lochsa River, between Weippe Prairie and Lolo Pass.

Environmental Consequences

An analysis has been made to define the kinds of land which should be avoided in permitting or construction of linear right-of-way utility lines, oil and gas pipelines, and communication lines. The analysis is based on information contained in the Pacific Northwest Long Range East-West Energy Corridor Study, Phase One (Draft), Part A-Rocky Mountains, Part B-Cascade Mountains, Bonneville Power Administration, December, 1977, and the Western Utility Group's "Western Regional Corridor Study." This analysis inventoried existing facilities and potential corridor locations. Guidance for the analysis is contained in a Region One letter to the Forests on Corridor Planning Guidance, 1990 Special Plans and Studies, dated October 7, 1982. The visual retention areas and the Historic Trail classify as avoidance areas as described in Criteria for Identifying Corridor Exclusion Areas, Avoidance Areas and Windows in Montana, May 1982. Avoidance areas are defined as areas where establishment and use conflict with land use/land management objectives. Exclusion areas are defined as areas where such facilities are not allowed.

Existing Corridors: An existing Bonneville Power electrical transmission line, originating at Dworshak Reservoir, crosses National Forest land in the Palouse District east of Helmer and Bovill. This utility corridor does not cross any lands classified as exclusion or avoidance areas for corridors in this plan, therefore, it does not create any conflicts with land management objectives for the area.

Potential Corridors: A potential corridor is shown in the Western Regional Corridor Study crossing the Forest in east-west direction between Lolo Pass on the east and the Musselshell area on the west. The general location follows the main divide between the North Fork of the Clearwater drainage and the Lochsa-Middle Fork of the Clearwater drainage. A more detailed discussion of this potential corridor or "window" may be found in the planning records in a "Corridor Need Report, Clearwater National Forest" as prepared by the Bonneville Power Administration, May, 1986. The location may coincide with the Lewis and Clark Historic Trail for the major portion of the distance crossing the Forest.

It would also be within some visual retention areas as viewed from U.S. Highway 12 and other major roads or trails. Since the location of the Lewis and Clark Trail is either parallel to or within the potential utility corridor, the outlook for finding short passageways through the constrained area appears unlikely. Avoidance areas would be difficult at best.

Corridors, especially those for electrical transmission lines, can have major visual impacts. Since these corridors (electrical) require constant reduction o overstory and contain towers and lines that are usually above the surrounding vegetation, they can often be seen from long distances. Other corridors (road, pipeline, etc.) can be screened by vegetation and would only be visible from short distances.

All corridors, in their initial construction, require right-of-way clearance and are generally paralleled by a road. During construction and maintenance, soil is disturbed and erosion can occur. Though efforts are made to avoid disturbance in and near streams, streams must be often crossed. In the process, some damage may be done to water quality or fisheries from soil movement. If the corridor contains a pipeline, there is always the danger of leakage. When a stream is involved, the leakage can have drastic effect on water quality and possibly on fish habitat or the fish themselves. Corridors can have significant impact on visual quality especially as related to the quality of recreation in primitive, semiprimitive, and developed recreational settings. They would be especially incompatible with wilderness and research natural areas. The Forest Plan shows in which management areas utility transportation corridors are either excluded or avoided.

Table IV-17 shows the acreage within each category by alternative.

Table IV-17 Utility - Transportation Corridor Exclusion and Avoidance Areas (Nearest 1000 Acres)

Areas	AMS MIN LEVEL	AMS MAX PNV	Alternatives A (cd)	B	C	D	E & E1	F	G	H	I	J	K (pa)
EXCLUSION AREAS													
Lands classified as wilderness or proposed wilderness													
a Selway-Bitterroot Wilderness	259	259	259	259	259	259	259	259	259	259	259	259	259
b Recommended wilderness areas	0	0	190	0	46	130	189	297	454	715	950	258	198
TOTAL	259	259	450	259	305	389	448	556	713	974	1209	517	457
AVOIDANCE AREAS													
Areas where establishment and use of corridors would conflict with land management objectives													
a Existing and proposed Research Natural Areas (special research features)	0	1	1	1	4	5	40	7	2	5	0	4	8
b Existing campgrounds and administrative sites (recreation values and existing occupancy conflicts)	0	2	2	2	2	2	2	2	2	2	2	2	2
c Unroaded semiprimitive recreational areas (dispersed recreation, wildlife and watershed values)	0	0	92	0	71	293	188	290	0	14	0	169	226
d Visual retention areas (scenic values)	0	3	58	0	1	53	55	23	37	45	23	53	47
e Elk Creek Falls Recreation Area (roadless recreation & scenic values)	0	0	1	0	1	1	1	1	1	1	1	1	1
SPECIAL AREAS													
Areas with special or unique values that have been accorded specific and sometimes protected management status through legislative action These values would conflict with facility placement													
a Lewis and Clark Trail, Nee-Mee-Poo Trail and Lolo Motorway (historic, cultural and scenic values)	0	0	34	0	0	34	34	34	34	34	34	34	34
b Lochsa-Middle Fork Clearwater Recreation River Corridor (recreation and scenic values)	0	24	24	24	24	24	24	24	24	11	4	24	24
Total		30	218	27	103	412	344	381	100	112	64	287	342
Total area outside avoidance and exclusion areas	1578	1548	1175	1551	1429	1036	1045	900	1024	751	564	1093	1038

Corridors, whether paralleled by a road or not, can have an effect on the way wildlife, especially big game, use an area. As with roads, big game may for a time avoid crossing the right-of-way. Once the corridor has been in place for a number of years, the big game may make use of the area for both forage and movement.

Livestock, unless physically restricted by fences, can also use right-of-ways for both forage and movement. This can create problems since livestock can move along these corridors for considerable distances away from the allotment.

Corridors are established by definition of a need. The number and kind are not likely to vary between alternatives. The location will vary according to the identification of exclusion and avoidance areas identified by each alternative.

Corridors can have some effect on the local economy, especially in the construction phase. Construction crews will likely be located in the communities for some period of time and local merchants will benefit. The corridors contribute little or nothing to PNV and, where on Forest lands, contribute nothing to the local government. The short-term use can have a long-term effect on productivity in that trees are usually not allowed to reach merchantable size. Corridors are long and contain many acres. Though their establishment may not mean a totally irreversible commitment of resources, the life of a corridor is likely to be long into the future. Trees that would have grown in the corridor during the lifetime constitute an irretrievable loss.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - The existence of an unoccupied corridor has no effect on long-term productivity, though an occupied corridor will, obviously, result in losses of commodity resources.

Irreversible and Irretrievable Commitment of Resources - The identification of the corridor is not an irreversible or irretrievable commitment of resources. However, as long as the corridor does not cross identified exclusion areas, the possibility of occupation by a utility does exist.

Adverse Effects Which Cannot Be Avoided - Until occupation occurs, none are identified.

Conflicts with Objectives of Other Land Management Plans, Policies and Controls - None

U. INSECTS AND DISEASE

Summary of Changes Between Draft and Final

The Forest Plan provides stronger direction to utilize integrated pest management methods to prevent and control potential pest problems.

Environmental Consequences

There is a wide variety of damaging insects and pathogens in the Forest, although most are at endemic levels (Bousfield, W.E. and R.L. James, 1981). Most of the potentially damaging ones are associated with mature and over-mature stands.

The mountain pine beetle, an endemic pest, does not present a particular problem at this time. Historically, most attacks have been in older (90+ years) white pine and most of these have been eliminated through blister rust and/or timber harvest. There has been little or no beetle activity noted in the lodgepole pine stands. Susceptibility of these stands to epidemic infestation is related to tree age, diameter, recent growth trends and elevation-latitude of the stands (Cole and Amman 1980). Lodgepole stands reach the hazard threshold when stand age is greater than 80 years with an average tree DBH of eight inches. Tree mortality is inversely related to increasing elevation-latitude. There are approximately 180,000 acres of lodgepole stands which are presently 65 to 70 years old, eight inch DBH, and at 5000' to 6000' elevation. Such stands would be rated low to moderate risks for mountain pine beetle epidemic. This rating will become more severe by the end of the second decade as these stands become old and larger in average diameter. Another 76,000 acres are of low risk. The Douglas-fir tussock moth has reached epidemic or near epidemic proportions in the Clearwater several times in the since 1945. Such infestations can occur about every ten years (Tunnock and Dubrevil 1982), outbreaks usually last one to three years. Although no defoliation has been detected since 1974, there are indications that populations are presently building. Despite the insect's name, grand-fir is its preferred host followed by Douglas-fir and spruce. Larvae can kill trees in one season and overall stand mortality can range from 0 to 40 percent (Wickman et al 1981). Hazard is based on five variables: (1) physiographic location; (2) depth of volcanic ash; (3) stand density; (4) age of host trees; and (5) proportion of grand-fir in the stand. There are currently approximately 81,000 acres of high risk stands (essentially confined to the Palouse).

Root diseases (Armillaria mellea, Phaeolus schweinitzii, Fomes annosus) may be more extensive than was previously thought. Root disease is a condition of the site and can be as site-limiting as soil and climate factors (Tunnock and Dubrevil 1982). Hazard is mainly a function of three species and specific site conditions making predictability especially difficult. It is known that in excess of 245 MMCF of timber has been killed by root disease in the Clearwater (Steward and James 1982).

White pine blister rust has been a continuing problem since its introduction into the area. Contributing to the problem is the fact that seventy percent of the commercial forest land is composed of habitat types favorable to the production of white pine. Priority harvest of old-growth white pine stands, silvicultural manipulation of younger stands and the development of rust-resistant planting stock have reduced the impact of this pathogen to manageable proportions.

Timber management provides a primary means of implementing integrated insect and disease management strategies. Alternatives with the largest suitable land-bases for timber management will likely derive the greatest benefits in insect and disease management. Benefits include increased access to stands for suppression and/or salvage and silvicultural manipulation of stands to improve vigor and species/age class diversity.

Adverse effects of timber management on insect and disease management could include opportunities for increased insect populations in slash resulting from timber harvest (Smith 1962). Also, crop trees could be damaged by logging activity during intermediate harvesting thereby making them susceptible to diseases (Ibid). These effects would occur in all alternatives.

The loss of large areas of commercial timber to insects and/or diseases could have impacts on harvest scheduling and reforestation programs, depending on the number of acres involved and where the losses occur. Such losses could impact the availability of timber for harvest, altering local and regional economic and social patterns.

Large amounts of tree mortality in streamside areas could affect water resources by blocking fish passage, increasing water temperature and reducing stream stability. Likewise fallen trees in wildlife winter range impede big-game movement and make areas unsuitable for big game in winter.

Epidemic insect infestations would create openings in the forest canopy that could affect big-game species. In areas where there are large acreages of closed canopy forests, a mosaic of openings would improve available forage. In areas where sufficient forage is available or excessive amounts of openings would be created, cover would decrease below desired management levels.

In the general forest area, impacts on scenery are temporary. In developed campgrounds, the tree mortality could change the entire character of the camping environment for several decades.

Fuels build-up is greatly increased in insect infested areas. The risk of wildfire increases in these areas, particularly where the infestation area is large and contiguous. This increased risk persists for several decades following the infestation unless active measures, such as prescribed burning, are initiated to reduce or break up the fuel concentrations. A wildfire in the heavy fuel loadings that would be expected following an insect epidemic would have major adverse impacts on a wide range of resources.

Control actions for insect and disease problems frequently involve silvicultural treatments to develop timber stand conditions that are unfavorable to the pest. Such treatments can include planting tree species that are resistant or unsusceptible to a particular pest or favoring such species in intermediate thinnings. Another control method is to maintain high stand vigor throughout the stand's growing cycle by maintaining stand stocking levels where individual tree growth rates are high. Harvesting stands close to the culmination of mean annual increment is another treatment option. Attempts to harvest large areas of already infested trees are usually ineffective in dealing with forest pests, particularly insects. Often operations to utilize insect-killed trees area confused with actual control actions.

In the case of the mountain pine beetle, it may be possible to limit the insects' impact by breaking up contiguous areas of high and moderate risk stands with timber harvests prior to the spreading of the beetle into these areas. Another option is to thin moderate and low risk stands to increase tree vigor and alter site conditions within stand, making the trees less susceptible to successful beetle attacks for a time.

Other control actions available to deal with Forest pests involve direct control actions utilizing chemical pesticides, natural extractives such as pine oil, artificially produced pheromones, or biological agents.

Strategies for insect and disease control do not specifically call for the use of pesticides. Any proposed use of this form of control in the future would be preceded by a full environmental analysis under the National Environmental Policy Act.

Recent developments in direct control involve the use of artificial pheromones which disrupt the insects' reproductive cycle or attract the insect. In the case of mountain pine beetles, certain trees or stands can be "baited" with an artificial pheromone to attract large numbers of beetles from the surrounding area. The trees are then harvested and removed from the forest while the beetles are still in them. Traps baited with the pheromones can also be used to collect and dispose of insects without harvesting any trees. These control actions do not eliminate the risk of insect infestations, but reduce the risk to specific areas for a period of time. The additional time that these control measures might allow permit the susceptible stands to be harvested and regenerated at a controlled rate.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - The application of silvicultural control methods increases the long-term productivity from the standpoint of recoverable resources.

Irreversible and Irretrievable Commitment of Resources - Immature and mature timber killed by insects represents an irretrievable loss of that resource. In the Clearwater, the majority of pure or near-pure lodgepole stands are in the roadless areas. As these stands begin to become susceptible to epidemic mountain pine beetle infestations (in 15 to 20 years), increased road access would be required if the decision was made to reduce the potential through silvicultural manipulation. Such roading would result in an irretrievable loss of the wilderness character of these areas.

Adverse Effects Which Cannot Be Avoided - Even with the most intensive insect and disease control programs, some timber losses and associated resource impacts will continue to occur. Insects and diseases will continue to play a significant role in the Forest ecosystem.

Conflicts With Objectives of Other Land Management Plans, Policies and Control - None identified.

V. TIMBER HARVEST

Summary of Changes Between Draft and Final

In the Preferred Alternative K, the Clearwater Forest has proposed an increased timber harvest or allowable sale quantity (ASQ) of 173.3 MMBF/Year for the first decade. This is an increase of 13.8 over the Proposed Action (E) in the Draft. Approximately 10 MMBF of this will be from the noninterchangeable component consisting of live and dead trees which are currently unmarketable. The increase in ASQ is in direct response to local public and timber industry concerns over community stability by maintaining a viable local timber industry.

The amount of timber that can be harvested from the roaded portion of the Forest is limited to approximately 90-100 MMBF per year, to meet standards in the Regional Guide and Forest Plan.

Another change involves key big-game summer habitat. The Forest proposes under the Preferred Alternative K that in the new Management Area C8S developed between the Draft and Final, timber entry in a wildlife habitat unit will be limited to no more than once per decade. C8S replaces C2S and C6S under the Preferred Alternative K.

Environmental Consequences

Timber harvests have a significant effect on the physical and biological environment. The extent of these impacts is dependent on the specific methods of treatment, the area where the timber is harvested, and the rate at which it is harvested.

Timber yields for the first decade and the long-term sustained yield (LTSY) level for each alternative are shown in Table IV-18. The first decade harvest level is less than the LTSY in all cases because of legal requirements. All alternatives have a harvest schedule that is at the LTSY level between the fifth and tenth decades. The long delay in achieving LTSY is a result of three basic circumstances. These are:

1. The LTSY level is determined by the number of suitable timber acres in the alternative. The amount of unroaded management in each alternative has a substantial bearing on total suitable acres.

2. Fish, wildlife and watershed objectives along with a 30 percent access constraint into roadless areas designated for timber hold first decade volumes to a point below that dictated by timber suitability alone.

3. Volume increases are limited to a gain of 30 percent per decade to allow mill capacity to keep pace.

The fish, wildlife, and watershed objectives plus the 30 percent gain limitation, therefore, restrict the rate at which timber yields approach potential LTSY.

Table IV-18. Average Annual Timber Yield, First Decade (million board feet)

	Alternatives/Benchmarks												
A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
First Decade													
181	225	213	176	160	146	160	191	139	117	176	173	309	0
LTSY													
464	543	533	429	443	443	361	442	316	255	431	440	585	0

Alternatives H and I have the fewest acres of suitable timberland and therefore have the lowest LTSY. Alternative I has the most acres in recommended wilderness.

The harvest of timber has been very important to the economic base of local communities within the zone of influence of the Clearwater National Forest since major harvest activities began in the early 1930's. Seventeen mills have been, historically, dependant on timber supplies from the Forest. An estimated capacity of 478 MMBF of timber for the DEIS was used as the upper limit of harvesting in the first decade, although it never became constraining under any alternative. Between the Draft and the Final we have received an updated capacity of 492 MMBF from a local concerned citizens group and the local timber industry. This update also included the local group's assessment of available supply (440 MMBF). Therefore, the group projected a gap of approximately 52 MMBF between supply and existing capacity. We have analyzed the local group's supply assessment and feel that more supply is available from State lands, other National Forests, industry fee lands, and BIA lands, than the local group projected. We feel the gap is somewhere between 20-25 MMBF. As a result of this increased capacity and potential demand the allowable sale quantity was increased from 160 MMBF in Alternative E to 173 MMBF in Alternative K (Preferred Alternative). We also recognize that mill capacity may or may not be an indication of demand. Demand is strongly dependent on lumber prices and the condition of the national market.

The level of timber harvest is important not only in providing for jobs in the timber industry, but also through indirect and induced impacts in other industrial sectors as well. This is illustrated in Table IV-19 which shows the significance of a timber harvest program of 100 MMBF on the regional economy. These relationships are linear, allowing direct comparisons in economic categories between alternative levels of timber harvest. For example, the difference in annual timber sale volume between Alternative A (current direction) and Alternative H (high wilderness and nonmarket value emphasis) is 38.6 MMBF/yr or 38.6 percent of 100 MMBF in Table IV-19. This results in a difference of 38.6 percent, or 450 jobs, and 11.36 million dollars for all sectors of the regional economy resulting from reduced timber. The jobs lost due to reduction in timber harvest may be affected by increases in other resources.

Table IV-19. Impacts of a 100 MMBF Timber Program on the Regional Economy *

Sector	Total Income (MM$)	Employment (Number of Jobs)
Misc. Agriculture	.7991	18
Meat Animals, Misc. Livestock	.0431	2
Gold Ores	.0000	0
Misc. Mining	.0021	0
New Construction	.0000	0
Maintenance and Repair	.1309	7
Misc. Manufacturing	.1633	7
Food and Kindred Products	.1410	7
Logging/Sawmills	11.7162	379
Other Wood Products	.7501	55
Veneer and Plywood	2.7223	103
Paperboard Mills	3.2586	101
Trans. Comm. Util.	1.8224	59
Wholesale Retail Trade	3.2544	194
Fm. Ins. Real Estate	2.3591	31
Hotels and Lodging Places	.0664	12
Misc. Services	1.6158	130
Eating and Drinking Places	.4367	55
Govt. Enterprises	.1582	6
Scrap, Used, and Secondhand	.0000	0
Total	29.4397	1,166

* Regional economy includes Idaho, Clearwater, Nez Perce, Latah, and Lewis Counties in Idaho and Mineral County in Montana.

The 1980 RPA Revised Statement of Policy found in the Forest Service Manual 1920, 10/82, R-1 Supplement 5, requires a comparison of the long-term sustained yield (LTSY) for timber with the projected growth rate of timber at year 2035 for the Preferred Alternative. The LTSY for the Preferred Alternative K is 96.8 MMCF per year. The predicted growth rate for the Preferred Alternative is 87.5 MMCF per year, indicating that the Forest would achieve 90 percent of the potential growth by the fifth decade if managed under the Preferred Alternative. Refer to Table IV-20.

Table IV-20. Annual Long-Term Sustained Yield and Growth by Alternative (millions of cubic feet)

Alternatives	LTSY	Growth at 2030	Growth as Percent of LTSY
A (cd)	103.0	98.7	96
B	120.6	111.1	92
C	118.4	108.7	92
D	95.3	90.2	95
E	98.3	96.7	98
E1	98.3	80.1	81
F	80.3	75.5	94
G	98.2	92.8	95
H	70.2	63.3	90
I	56.6	53.2	94
J	95.8	91.0	95
K (pa)	96.8	87.5	90

All alternatives except the departure E1, achieve at least 90 percent of the potential level of growth by 2030 as specified in the RPA policy statement described above.

Differences in total growth and LTSY are based on differences in total lands designated to timber management suitability between alternatives.

Timber management only occurs on lands classified as suitable. The process for determining timber suitability determines which acres are capable and available for managing timber. Productive physical capability to produce timber economic efficiency, and ability to meet other management objectives are all considered when determining suitability. The changes in (Table IV-21) shows that suitability for each alternative results from different areas being assigned different management objectives in the various alternatives. If an area of land is recommended for Wilderness designation it would be unsuitable, but in another alternative with different objectives, the same area may be considered suitable.

Unsuitable lands are not included in the calculations of timber harvest levels, however, on some areas designated unsuitable, timber harvest may occasionally occur. The timber harvest would occur to meet some other objective. For example, in a developed recreational site, hazardous trees may be removed to protect the users of the area. Other reasons for timber harvest in unsuitable areas could be for wildlife and fish habitat improvement, insect and disease control, enhancement of aesthetics, etc. Usually these harvest areas will be relatively small.

Table IV-21. Timber Suitability
(m acres)

	Alternatives/Benchmarks													
	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
M Acres	1041	1153	1134	941	997	1008	793	960	694	548	949	988	1249	0

1. Silvicultural Systems

Summary of Changes Between Draft and Final (Also see a and b below.)

As a result of public concern about overcutting and damage to riparian areas, the Preferred Alternative K recommended by the Clearwater Forest changes the silvicultural system on riparian areas from mostly even-aged to a combination of uneven-aged and even-aged. Tables IV-22 and IV-23 shows the changes between even-aged and uneven-aged systems.

Table IV-22. Even-Aged Timber Harvest
M Acres

Decade	MNLV	MPNV	A (cd)	B	C	D	E	E1	F	G	H	I	J	K(pa)
1	0	12.0	7.1	9.1	8.4	7.0	6.4	5.4	6.4	7.7	5.6	4.7	7.0	7.6
2	0	11.9	6.3	8.3	7.9	6.3	5.6	6.3	5.7	6.9	5.0	4.3	6.3	7.9
3	0	15.0	7.3	9.4	9.0	7.0	6.3	9.1	6.4	7.7	5.6	4.7	7.0	7.4
4	0	15.3	8.4	11.4	10.6	8.3	7.1	8.0	7.4	8.9	6.4	5.4	8.1	8.6
5	0	19.0	8.2	10.9	9.9	8.3	7.3	28.6	7.4	8.9	6.7	5.4	8.3	11.8

Table IV-23. Uneven-Aged Timber Harvest
M Acres

Decade	MNLV	MPNV	A (cd)	B	C	D	E	E1	F	G	H	I	J	K(pa)
1	0	0.4	0	0	0.1	0.1	0.1	0.9	0.1	0.1	0.1	0.1	0.1	3.6
2	0	0	2.0	0	0	1.4	1.6	2.0	1.2	1.2	0.6	0.6	1.4	5.0
3	0	0.4	2.2	0	0.1	1.1	1.2	0.9	0.8	1.0	0.7	0.4	1.0	11.5
4	0	0	2.0	0	0	1.4	1.6	2.0	1.2	1.3	0.6	0.6	1.4	11.1
5	0	0.4	2.3	0	0.1	1.0	1.3	1.0	0.8	1.1	0.8	0.4	1.0	11.7

Environmental Consequences

There are two basic types of regeneration harvest systems: even-aged and uneven-aged. Both are appropriate for the Clearwater depending on existing stand conditions and the resource management objective.

Prior to 1970, clearcutting, seed, and shelterwood cutting accounted for 52 percent of the harvest; undefined selective cutting accounted for the rest. This heavy reliance on selective cutting was primarily a reflection of the highly species-correlated market in the early years of harvest and the white pine salvage era which began in the early 1950's. Since 1970, as many old-growth timber stands were brought under intensive management, there had been a trend to even-aged systems; in fact it accounted for upwards of 83 percent in 1980 (Table II-22).

In all alternatives the emphasis on even-aged harvesting continues in all management areas designated for timber management. The visual travel corridors and the riparian area both allow for the judicious use of selection harvest where the specific resource management objectives dictate a continuous forest canopy and where existing stand conditions and logging accessibility allow feasible implementation of this system. Often modified even-aged systems coupled with harvest scheduling limitations can be used to achieve multiple resource objectives in these sensitive management areas. Considerable public concern was expressed on the Draft that riparian values would not be adequately protected.

a. Uneven-aged Systems

The uneven-aged harvest system was modeled in FORPLAN for Management Areas A4, A6, and M2 in Preferred Alternative K.

In the uneven-aged system there are two primary harvest methods: single tree selection and group selection. In the single tree method, single trees are removed from the stand in periodic harvest entries. Trees in all age classes are harvested to achieve the desired age/size class distribution such that reproduction is continually encouraged and subordinate crown classes are released from competition. In group selection, all trees in a small area are harvested or cleared from the site. This is similar to the even-aged system except that the size of the opening created by group selection is fairly small, generally less than two acres in size. The opening is small enough so that the site conditions within it are significantly influenced by the surrounding stand (Smith, 1962). The silvicultural prescriptions and controls required to successfully implement uneven-aged management are usually more difficult and complex than for even-age systems. If stand inventory and regeneration success are not closely monitored, it is possible to end up with stands where the most desirable trees are harvested and inferior ones are left. The growing stock could trend toward a high percentage of cull trees and less desirable tolerant species, and genetically inferior individuals (Smith, 1962; Daniel, Baker and Helms, 1980). Logging and associated costs, such as slash disposal, are generally higher in uneven-age management. Also, damage to the residual stand is difficult to control, especially in the later entries when smaller trees comprise a larger component of the stand. The unavoidable logging damage implicit with the frequent harvest

entries and the promotion of sucessional advance toward climax species makes insect and disease damage a major concern (Smith, 1962; Daniel, Baker and Helm, 1980).

All climax tree species i.e., those species that can reproduce themselves under dense shade, could be managed under uneven-aged harvest systems. In the Clearwater, this includes mountain hemlock, subalpine fir, grand fir, western redcedar, and Douglas-fir.

The successional status of a tree species is highly dependent on the ecological conditions of the site and the majority of the Clearwater Forest is climax for western redcedar and subalpine fir. Uneven-aged management advances succession to the climax composition and thereby reduces tree species diversity. Forest selection systems promote western redcedar, subalpine fir, and to a lesser extent grand fir to the exclusion of Douglas-fir, western larch, western white pine and ponderosa pine. Stands composed of mostly climax species offer a more optimal environment for insects and disease than do stands of mixed seral species (such as ponderosa pine, western larch and western white pine). Also it is the seral species that possess inherently faster growth rates and are most valued for lumber production.

Conceptually uneven-aged management offers the opportunity to capture the full growth potential of the site because a site is continuously occupied by growing stock trees and there is no production loss associated with the regeneration phase of classical even-aged management. However in reality the stand must be maintained at below optimal stocking in order to promote continuous regeneration and subordinate crown class development. Hence uneven-aged management represents a loss of timber production potential because sub-optimal stocking must be continuously maintained, because the favored climax species have inherently slower growth rates, and because of insect and disease damage associated with the late successional stage.

Uneven-aged management provides a good chance for natural regeneration because the residual trees provide a continuous seed source. However, it is difficult to control and the species composition of the natural regeneration obtained may not be as desired for management of the site. Uneven-aged silviculture requires frequent logging entries (Hahn and Bare, 1979). It is also costly to implement and results in high fuel management costs, requiring in many cases handpiling of the logging or thinning slash. This precludes opportunities for use of broadcast burning which would simulate the environmental conditions associated with natural wildfire.

As stated previously uneven-aged management will most likely be concentrated in timber stands within riparian areas and stands with highly sensitive visual objectives. Other areas suitable for uneven-aged systems include campground and other high recreational use areas, and mass wasting areas. This represents a relatively small percent of the total area harvestable in the Forest. The actual decision to apply uneven-aged management will be based on site-specific evaluation of the physical capabilities of the site, the resource objectives, and the present stand conditions.

This system selects individual trees from all size classes for harvest while maintaining some mature trees for future growth and eventual harvest. The system has little effect on the visual resource, at least when viewing is from a distance. Water quality and quantity are affected by this harvest system because the canopy is altered significantly, soils are disturbed with periodic harvests and the remaining trees are not able to respire the extra water. Since soil is bared, and accelerated erosion is slight (Rice, et al, 1972), and changes in stream temperature and stream bank stability are modified, water quality degradation is short-term and temporary. Cover for wildlife is not significantly reduced and the small openings created by group selection, generally two acres or less, can be very beneficial to most wildlife species.

Mature trees are left in riparian zones following uneven-aged harvest to maintain riparian dependent resources. Some of the trees left may fall into the stream (debris recruitment), maintaining channel stability and bedform, and create essential components of fish habitat. Timber harvest volume will be reduced to accomplish these objectives, though many of the trees in these zones will eventually be harvested.

Uneven-aged harvest results in maintaining tree cover on the sites including a stand component of mature trees and a vertically diverse stand. Under single tree selection, the production of browse forage for deer and elk is low (USDA 1976; Uneven-aged Silviculture and Management in the Western United States). Small group selection resulting in small openings may result in slightly improved browse production. The essentially closed canopy will provide high quality thermal cover on a continual basis, and the increase in smaller size classes will result in improved hiding cover. Wildlife species that are adapted to continuous tree-cover habitats and vertical diversity, such as many bird species, will be favored. If adequate numbers of snags are left standing, cavity-dependent species would be less adversely affected.

b. Even-aged Systems

Even-age harvest systems including seed tree, shelterwood, and clearcutting, were also modeled in FORPLAN. These prescriptions were assigned in the model to reflect physical capabilities and limitations of timber sites.

Even-aged silvicultural regeneration methods are appropriate for many of the vegetative habitat types in the Clearwater Forest.

Current timber stand age classes lend themselves well to even-aged management. As a result of past wildfires most stands are either two-storied with mature or immature and seedling/sapling, or all one size class.

Several of the more valuable commercial species are seral species such as ponderosa pine, Douglas-fir, western larch, and western white pine. To provide desirable conditions for growth of these valuable species, even-aged silvicultural systems are necessary.

Many insect and disease problems common in uneven-aged stands such as tussock moth, spruce budworm and root diseases may be avoided by practicing even-aged harvest systems (Stoszek and Mika, 1978, Fauss and Pierce, 1969).

Even-aged silviculture minimizes damage to residual trees since equipment generally does not have to traverse through standing timber and harvest entries are few, from one for clearcutting to two or three for seed tree and shelterwood.

Of the even-aged silvicultural methods, clearcutting is often the optimal method on many sites and stands because the existing stands do not have the species composition or vigor needed to successfully apply other even-aged methods. The acres of regenerative harvest by alternative is the amount projected that will be needed to achieve management objectives and respond to physical and biological limitations. Additional analysis considering site-specific data is done for each project environmental analysis. Silvicultural prescriptions are prepared by certified silviculturists to determine the optimal treatments for individual stands.

Based on past experience and existing mix of habitat types, the regeneration harvests in most alternatives are expected to be 30 percent shelterwood and 70 percent clearcut. The application of the specific method, clearcutting or shelterwood, will be decided at the project level based on specific stand and site conditions, the ratio that would actually be implemented in any alternative was assumed to be close to the 30 percent to 70 percent figure.

Intermediate harvests of commercial thinning are scheduled for stands managed with moderate or high intensity. In all alternatives except the departure run (E1) and the maximum PNV and benchmark run, intermediate harvesting in the model does not occur until sometime after the fifth decade, primarily because of the timber involved in converting stands to intensive management. Intermediate harvests may be prescribed based on site specific analysis.

A landscape's character can be visually impacted by even-aged harvesting systems. Openings created can be visible for long distances. The degree to which they are readily visible as created openings depends in part on size, shape, position on a slope, and the distance from which it is viewed. Openings may be more visible depending on the time of day and season of the year. In areas with heavy snow accumulations, openings may be more visible in the winter thatn in the summer.

c. Comparisons

The degree to which the timber harvest activities are modified to minimize the impact on the landscape varies by alternative. In each alternative, the visual quality objective to be achieved on the suitable timberlands is specified as acres. These acres are shown in Table IV-24.

Table IV-24. Acres of Visual Quality Objectives on Suitable Timberland (m acres)

A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
Retention													
58	0	0.3	41	42	42	48	48	28	13	41	36	1	0
Partial Retention													
97	80	77	118	143	144	87	87	94	52	125	146	57	0
Modification													
725	876	864	659	701	710	553	675	457	395	666	695	973	0
Maximum Modification													
161	197	193	123	109	109	104	150	87	88	118	111	217	0

Those alternatives which emphasize market outputs result in more acres of land managed for modification or maximum modification (management activities may dominate the landscape). A higher intensity of management is required to attain market output targets, resulting in more acres of landscape being impacted by management activities. Alternatives B, C, and G illustrate this relationship.

The low to moderate emphasis on market outputs in alternatives D, E, F, H, I, and J allow more acres to be managed for harvest activities that fit more naturally into the landscape as indicated by the higher proportion of suitable acres in retention and partial retention.

For all alternatives, visible impacts of harvest activities on the landscape viewed from selected travel corridors (Management Area A4 and A6) and recreational or administrative sites (Management Area A5) will be reduced by managing the foreground for retention or partial retention. The differences between alternatives correspond directly to the amount of suitable timberland in each alternative. (See Table IV-21.)

In clearcutting, all trees are removed from the area in a single cut. In shelterwood cutting, a few trees are left in the area to ameliorate severe site conditions and provide seed until the site is stocked and the seedlings have become established. These systems have potential for adverse environmental effects since the removal of all or most of the large trees from an area in a short period of time creates openings and exposes more soil to erosion (Bethlahmy, 1967; Megahan and Kidd, 1972).

As trees are removed, transpiration and interception losses are reduced and more water infiltrates into the soil. A loss of slope stabilizing root strength may also occur. This is important because, on some land types, it may lead to mass failure: the slipping of large areas of soil and rock on steep

slopes and clay soils (Dyrness, 1967; Fredrickson, 1970; Megahan, 1971). Potential problem areas with high or moderate mass wasting hazards are dealt with on a site specific basis.

Water yield increases are a function primarily of the total area harvested (percent crown removal) and the silvicultural treatment applied (USDA, 1975; Anderson, Hoover, and Reinhart, 1976; Troendle, Leaf, 1980). As management increases the acreage logged or crown removed, water yield can be expected to increase. Increases are due mainly to reduced interception, decreased evapotranspiration, and modification of snow accumulation and melt rates. The magnitude and duration of these increases in discharge, which occur during spring runoff, may affect the stability and integrity of stream channels. All alternatives are expected to increase water yields over baseline conditions though the increase will not affect stream channel stability as long as timber harvests are not concentrated in any one drainage. Extensive even-aged management of riparian areas affects stream environments if trees are removed from the streambanks (Weaver, 1983). Bank stability is reduced and debris which could provide channel stability and fish habitat are removed (Bryant, 1983; Frear, 1982). Many of the pools in Forest streams have been formed by woody debris. The debris now in streams will eventually rot so the maintenance of satisfactory pool-riffle ratios depends on large trees falling into streams regularly. In the short term, fish populations are not affected, but in 40 years there will be a reduction in stream stability and fish if large woody debris is not replaced. Stream temperatures may also be affected by the removal of streambank vegetation.

Forest direction and standards have been developed to mitigate the negative impacts of harvesting in riparian areas. As the area scheduled (suitable) for timber harvest increases, the cumulative riparian area involved also increases. Those alternatives with the most acres of timber to be harvested have the most potential to create conflict in riparian areas.

The primary impact of timber harvesting on fisheries comes from sedimentation caused by the roads that are constructed in conjunction with timber harvesting. See Section BB, Road System, for the effects of road construction.

Water quality standards which are based on fisheries objectives are the primary controlling factor on road construction and, ultimately, the rate of timber harvest in all alternatives in the first two decades. This is partially due to the current stream conditions on the roaded portion of the Forest. See Table IV-12 for a listing of the type and amount of fishery habitat objectives in each alternative. Under some management prescriptions, the economic effects of the road restrictions can be mitigated by maximizing the size of harvest units and minimizing the spacing between them to achieve a high ratio of harvest acres to mile of road ratio. In those alternatives that have specific objectives for the level of unit size and spacing between units will reduce the harvest acres to mile of road ratio and therefore, usually increases unit costs.

Timber harvest activities will not be permitted in classified or recommended wilderness for any reason. However, the signs of timber management activities may be observed from within some wilderness. This may have a minor effect of reducing the overall experience for the recreationist.

Timber harvest is beneficial from the fire protection standpoint in that timber harvest reduces the level and distribution of Forest fuels over time (Beaufait, 1972). Access created for timber harvests would also be beneficial because it would improve suppression opportunities in a wildfire situation.

Adverse effects of timber management on fire protection can be significant. The increased access associated with timber harvest and the logging activities themselves increase the risk of person-caused fire (Smith, 1962). Slash remaining after a timber sale constitutes a fire hazard. Fire in logging slash is more difficult and costly to control than in naturally accumulated fuels (Ibid). In all alternatives, timber revenues or capital investment funds ar used to reduce or manage activity-related fuels.

Manipulation of Forest vegetation through timber management activities directly impacts animal communities (Gill, Radtke, and Thomas, 1976). The availability of certain habitats will affect species which are dependent on them. Therefore, as the availability of certain timber condition classes changes, the diversity and abundance of wildlife species will change.

Even-aged harvest causes reduction in big-game cover, but increase in big-game forage and diversity for other wildlife when openings are created in dense canopies. Wildlife species which prefer openings or sparse canopies will find more suitable habitat and those species preferring dense canopy or old-growth trees will find less. Edges are created for those species which rest or hide in dense canopies and feed in the openings.

Timber harvest would affect plant community diversity by altering the *horizontal and vertical structure. Horizontal structure refers to the dominant* successional stage by vegetation type. Vertical diversity refers to the amount of layering of vegetation within one dominant successional stage. Timber management activities affect horizontal structure by harvest activities maintaining a variety of successional stages. Timber management that involve intermediate harvests will tend to reduce vertical diversity. Timber management that involves just a final harvest will result in stands with considerable vertical diversity.

To provide for minimum viable populations of old-growth dependent wildlife species, ten percent of the Forest acreage should provide old-growth habitat and half of this, or five percent of the total Forest acreage, should provide for old-growth habitat dispersed evenly across the Forest. (See Forest Plan, Appendix H.)

Given these assumptions and assuming that tree communities, that are on the average 160 years old or older, provide suitable habitat for old-growth dependent species, all alternatives will provide the total amount and kind of habitat necessary to maintain minimum viable populations of old-growth dependent species for at least the first ten periods. Problems may occur, however, in meeting the dispersion guidelines (i.e., minimum 25 acres units with at least one 300 contiguous acre area within each 10,000 acres of forest). Since harvest activities began in the early 1930's, the vast amount of timber removal has been from the easily accessible old-growth stands located along the western 20 percent of the Forest. Additionally major wildfires in the 1910 and 1933 destroyed large areas of the Forest containing mature stands

of timber. Natural regeneration of this land slowed the reforestation such that much of this land is occupied by stands with size classes from nonstocked to immature sawtimber. In many portions of the Forest, there are areas that presently do not have 300 contiguous acres of old-growth habitat. Maintaining present levels of harvest would necessarily eliminate many of the remaining acres of that size in the western portion. To allow for these deficiencies, existing old-growth stands as well as replacement stands will be identified during the timber compartment inventory and project level planning analysis and set aside for old-growth management.

The reduction in harvest levels included in Alternatives E, F, H, and I will not require eliminating existing old-growth stands on the west side in excess of the standard. The eastern 80 percent of the Forest is comprised, in large measure, of stands originating with the various extensive burns in this century along with inclusion of old-growth (either scattered trees or entire stands) which meet all established criteria.

Table IV-25. Amount and Percent of Old Growth on Forest (All Lands) in the 10th Decade. (m acres)

	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
Old-Growth Acres	725	625	630	753	764	699	800	728	855	954	750	558	618	1253
Percent Total Land-Base	39	34	34	41	41	38	44	40	47	52	41	30	34	68

Big-game species are impacted by timber harvest on summer and winter range. Most of the impacts on summer range are adverse while most of the impacts on winter range are favorable.

On those summer ranges where roads are left open to motorized vehicles, hiding (security) cover is critical to big game especially elk and deer. Game are especially vulnerable in key use areas. The inability to achieve interspersion, distribution,a nd size of cover and forage units can reduce carrying capacity (Leege, Thomas, et al, 1982). As timber harvest increases, the severity of this problem increases.

In areas that have had moderate to heavy timber harvesting activities in the past, continued harvesting may reduce cover below desired habitat management levels. About 65 to 70 percent of accessed areas should remain in hiding cover to achieve at least 50 percent potential elk use. In addition to the actual timber harvest, habitat is impacted by the distribution and scheduling of timber management activities. Increased road access and timber management activities can reduce security due to human disturbance (Lyon, 1979). In some cases, the disturbance may be of a degree and duration that would cause elk to leave a particular area permanently and move to an area with less activity. Ease of access also increases the chances that animals will be killed during hunting

seasons and through poaching. Controlling the timing of timber sales and road construction in a particular drainage or area, as well as limiting the size of cutting units, especially even-age cutting, and providing for a good distribution of units with adequate cover areas between, are ways to mitigate the adverse effects of timber harvest (Lyon, 1985.)

Limiting motorized access is another effective way to reduce the harassment of big-game animals (Lyon, 1985).

Adequate security areas for animals during periods of disturbance will be difficult to provide on lands managed at less than about 75 percent potential elk use. Lands managed at 50 percent or less do not necessarily provide an adequate security.

Winter ranges will be improved through timber harvest where site preparation is designed to emphasize browse production and natural tree generation is utilized. This should provide for an extended period of browse production as compared to planting the sites. The goal of the Idaho Fish and Game Department for the Clearwater National Forest is 19,900 animals by 1990. The effect of timber harvest and other management practices on potential elk habitat is shown in Table IV-26.

Table IV-26. Potential Elk Habitat (M Elk)

	Decade						
	1	2	3	4	5	10	15
Alternatives							
A (cd)	16.5	20.3	19.8	19.2	17.4	14.7	12.4
B	18.1	19.9	19.3	18.2	17.2	12.0	10.2
C	18.1	21.2	20.6	19.6	18.4	14.0	9.6
D	18.7	26.3	26.4	22.8	19.1	18.9	18.7
E	18.7	24.8	26.9	22.8	19.2	18.9	18.7
E1	18.7	23.8	24.6	23.3	18.7	23.9	18.7
F	20.9	24.4	22.1	21.0	23.0	22.2	20.9
G	17.7	19.0	18.4	17.8	17.1	13.7	12.4
H	16.5	21.1	20.8	18.0	16.5	16.5	16.5
I	15.1	16.7	16.7	13.8	13.8	13.8	13.8
J	18.7	26.3	26.4	22.8	19.1	18.9	18.7
K (pa)	17.8	24.3	29.2	31.8	31.7	29.6	27.0
MAX PNV	14.5	19.8	18.2	16.7	15.2	10.0	9.9
MIN LVL	12.8	11.4	10.5	6.0	4.2	4.0	3.0

Table IV-26 is a combination of winter range and summer range elk numbers, depending on which range is constraining. (See Table II-24, page II-148.) For example, under Alternative B, the first decade figure of 18,100 elk reflects the winter range potential, while the second decade figure of 19,900 elk reflects the summer range potential. The high allowable timber sale quantity requires an accelerated amount of timber harvesting the first decade. This creates large amounts of browse plants to grow on harvested winter range in the second and

third decades. The continued harvesting on the summer range roadless areas reduces populations. The result, summer range becomes constraining. This occurs in all alternatives that designate large acreages of summer roadless land for timber production (Alternatives A, B, C, and G). Winter range is constraining for elk in the first decade in all alternatives and remains as the constraining factor for Alternatives , E, E1, F, H. I, J, and K (Preferred Alternative).

As roadless areas designated for timber production become developed, elk summer range potential levels off although it still declines slightly through the 15th decade. Alternative K (Preferred Alternative) developed between the Draft and Final increases the amount of winter range available for timber harvesting (Management Area C4). Elk potential is increased starting in the second decade and remains higher than all other alternatives throughout the 15 decade planning horizon.

The C8S prescription developed for the Preferred Alternative K tends to maintain elk summer range numbers at a high level. Recommended wilderness especially under Alternatives G, H, and I, adversely affect elk winter and summer range populations in the long term because of the restrictions on habitat manipulation.

Timber harvest affects recreation by changing settings with a change in opportunity and attraction for various activities. Timber harvest and related road construction in previously roadless areas eliminate the primitive or semiprimitive setting and opportunity for activities dependent upon these settings. Opportunity for recreational amenities such as solitude, natural ecosystems, and nonmotorized recreation are reduced in areas of timber harvest. Some recreationists now using specific roadless areas would be displaced to other areas, or would be required to discontinue activities dependent upon roadless land. Recreationists who prefer activity in roaded and logged areas would experience increased opportunity in newly created roaded settings. Rapid harvest rates result in a decrease in visual quality, loss of wildlife habitat quality for species that require remote settings and a reduction in fish habitat. These effects result in reductions in attractiveness for recreation for most activities.

Short-term Use vs. Long-Term Productivity - Timber harvesting provides an opportunity to improve long-term productivity by replacing stands that are beyond the maximum biological growth potential with young, faster growing stands. Losses to insects and disease are reduced an are easier to control by maintaining stand vigor and regenerating resistant species. FIre hazards are reduced in the long term. The relatively low removal per entry and timber between entries result in a much longer time to achieve these positive results under uneven-age management. Timber productivity of sites on winter range is reduced when the effective rotations of the timber stands are lengthened due to a longer forb-brush stage of succession.

Timber growth rates for the Forest as a whole will remain below the potential levels for several decades because of fishery/water quality constraints on roading, which ultimately control the rate of converting over-mature stands to regenerated stands and the 30 percent upper bound constraint on timber harvest increases.

With most harvesting systems, particularly even-aged systems, it is more difficult to maintain visual quality. Some amount of soil may be displaced and moved off-site, reducing productivity. Habitat for wildlife species which prefer closed canopies is reduced but habitat for those species preferring openings is increased with even-aged management. The reverse is true with uneven-aged management.

Timber harvest has the potential to increase long-term productivity of elk population, provided the cover, forage, and security requirements are met.

Irreversible & Irretrievable Commitment of Resources - Opportunities for semiprimitive recreation will be lost. (See Appendix C for complete discussion of potential impacts.) The wildlife habitat changed by the harvest is also irretrievable (though because of successional relationships is not irreversible). The loss of timber volume and potential increases in growth as a result of constraints that limit the rate at which over-mature timber can be harvested are irretrievable. Increased losses to Forest pests (insects and diseases) as a result of constraints on harvest rates are also irretrievable.

Adverse Effects Which Cannot Be Avoided - Visual quality will be lowered, especially in even-aged systems; however, it will be protected in sensitive areas. Some soil will be eroded and in some cases water quality may be temporarily lowered and fishery habitat impacted. Impacts will be minimized by employing Forest Standards and best management practices. Also under even-aged systems, wildlife dependent on closed canopy, mature stands will be displaced to other areas until succession replaces that condition.

Conflicts with Objectives of Other Land Management Plans, Policies and Controls - None identified.

W. LOGGING METHODS

Summary of Changes Between Draft and Final

More area was designated for long-line and skyline logging in Management Area E3. C requires minimal road systems and aerial type logging systems.

Environmental Consequences

The choice of a logging method depends largely on land slope and management prescription, slope being the primary consideration. Tractor yarding is generally appropriate on the gentle slopes. On the steeper slopes cable/aerial systems are used because they offer better resource protection. Logging systems and transportation systems are planned concurrently to insure that the most cost efficient harvesting system is implemented while recognizing all resources and land activities.

Logging methods vary by management area. The differences by alternatives depend upon the amount of acres in each management area. The following is the approximate mix of methods. (See planning records for detailed breakdown.)

(1) Riparian areas - 0-55% slope - Equal mix of all methods.

(2) Aerial and riparian areas - 55% + slope - Long span and helicopter.

(3) Other timber areas - 0-55% slope - Equal mix between tractor skyline and intermediate skyline.

(4) Other timber areas - 55% + slope - Two-thirds skyline, one-third intermediate skyline.

Alternatives with the highest timber harvest levels would have the greatest mix of methods. Alternative B, for example, with 63 percent of the Forest designated for timber management would permit the most helicopter and long span because it has the most slopes over 55 percent. Alternative I, with only 30 percent of the forest suitable for timber management, would have less of the steep lands and, therefore, less aerial and long span methods.

1. Tractor Logging

Tractor yarding involves dragging the logs or trees behind a skidding machine along skidtrails from the stump to the landing. Skidding downhill is usually the most efficient. As much as 40 percent of suitable lands will be tractor logged depending on alternative. Tractor yarding distances will vary according to topography and economics. The maximum tractor skidding distances will fall between 800 and 1,700 feet slope distance. This equates to a road density between four and six miles per section. Logs or trees may be skidded with the leading ends suspended above the ground or with the entire length of the logs/trees dragging. Tractor yarding has the potential to cause soil compaction and displacement. Soil compaction is a potential problem on wet soils, especially those having a high ash content. Compaction causes reduced infiltration and air permeability which inhibits soil productivity (Froelich, 1979; Froelich and others, 1980). Compaction may also contribute to overland flow and increased potential erosion. Soil displacement increases the potential for wind and water erosion.

Soil compaction and displacement occur primarily in and immediately adjacent to skid trails. Studies have shown that approximately 20 to 30 percent of a harvest unit area is in skid trails if the trail spacing and location are uncontrolled. Soil compaction and displacement may be avoided or reduced by limiting tractor use to the dry season, by winter logging on snow or frozen ground, or by using designated skid trails which limit skid trail spacing and width. This typically reduces the total area in skid trails to ten percent or less (Froelich, Aulerich and Curtis, 1981). To assure minimal impact when tractor yarding, appropriate and timely post treatment erosion control measures (reseed/fertilize, waterbars, etc.) should be applied.

Although roads probably cause more than 80 to 90 percent of the erosion and sedimentation problems of an area (Megahan, 1972), erosion and the sedimentation that occur from tractor logging have the potential to impact streams and associated fish populations. The amount of sediment in a stream system above the natural rate may be directly related to loss of potential fish habitat (Stowell et. al., 1984). Tractor yarding must be strictly controlled to reduce this type of impact, especially when in close proximity to streams and draws. Skid trails which cross streams should be carefully planned to utilize temporary culverts or log/snow bridges. Tractor logging and the other yarding systems discussed in this section were included in the sediment yield predictions. (See Roads Section.)

On soils where compaction and displacement are not serious problems, tractor logging may be of some benefit. Mineral soil exposure provides site preparation necessary for seedling establishment. However, excessive topsoil removed by the tractor operation will decrease the productivity of the site (Froelich, 1979).

Tractor logging topography affords the most flexibility in slash disposal methods. This equates to lower overall brush disposal expense for tractor yarding.

Tractor logging is the least expensive method available to move the logs/trees from the stump to the landing.

Disruption and noise of logging operations may cause local, short-term degradation of the recreational experience.

Short-term Use vs. Maintenance and Enhancement of Long-Term Productivity - Soils on most land suitable for tractor logging are subject to soil compaction. Some loss of long-term productivity resulting from soil compaction and displacement will occur on lands that are tractor logged. These losses can be minimized with the use of designated skid trails and soil mitigation treatments. Some soil may be lost as a result of erosion in displaced, exposed mineral soil. Excessive topsoil loss will negatively affect long-term productivity. The fact that an area is tractor logged does not commit the area to be logged in the future. However, because the road system is in place, it is likely the area will be harvested in the future.

Irreversible and Irretrievable Commitment of Resources - Tractor logging the current stand of trees does not irreversibly commit the area to tractor logging in the next generation, but if the road system is designed to accommodate tractor logging, there is a strong possibility that tractors will be used in the future. Soil loss caused by the tractor yarding constitutes an irretrievable loss to the site.

Adverse Effects Which Cannot be Avoided - Tractor logging will result in skid trails which may be unsightly to Forest visitors. These trails will be revegetated. During the logging operation, noise and dust are generated by the tractors and soils are disturbed. Erosion and sediment that may be produced by tractor logging can impact water quality and fisheries habitat. Application of Forest Watershed/Fishery Standards will reduce erosion and sedimentation.

Conflicts with Objectives of Other Land Management Plans, Policies and Controls- None identified.

2. Cable Logging

Cable logging includes both highlead, with logs/trees dragging on the ground, and skyline, which has the capability to either partially or fully suspend the logs/trees above the ground during yarding. Over 60 percent of the land suitable for timber production will be cable logged.

a. Highlead

Highlead yarding is preferred when the following conditions occur:

(1) Yarding distances are less than 800 feet.

(2) Slopes are straight to concave.

(3) Soils are not sensitive.

(4) Silvicultural prescriptions recommend low leave tree/total tree ratio (light shelterwood or seed tree methods) or clearcut.

Highlead yarding distances vary according to topography, machinery, and economic limitations. The maximum highlead yarding distances will be between 500 and 800 feet. Where highlead yarding is applicable, road densities are similar to tractor skidding--four to six miles per section.

Because the logs are dragged along the ground, highlead has effects similar to tractor logging. However, the compaction effect is not as severe because the weight and tread of the tractor are absent.

Due to the dragging of the logs, there will be some soil displacement, although highlead impacts less area than tractor logging.

As in tractor logging, bared mineral soil will provide some of the site preparation necessary for seedling establishment. This benefit may be reversed if excessive topsoil is lost.

The topography associated with highlead logging necessitates more expensive slash disposal methods than with tractor logging.

The cost of highlead logging is slightly higher than that of tractor logging, but less than skyline.

Short-Term Use vs. Maintenance and Enhancement of Long-Term Productivity - Highlead logging affects compaction-induced reduction in long-term productivity less than tractor logging. Because of the steeper sideslopes which increase water velocity, the potential for topsoil loss is greater than with tractor logging. Therefore, reductions in long-term productivity based on topsoil loss may be greater with highlead logging than tractor logging. Applying Forest Standards will help mitigate this potential loss.

Irreversible and Irretrievable Commitment of Resources - The fact that an area is highlead logged does not commit it to be logged in the future. However, because the road system is in place and the area designated to timber management, it is likely the area will be logged in the future. Areas that are highlead logged are not committed to highlead logging in the future entries. In many cases, skyline yarding is compatible in previously highlead yarded areas. Tractor yarding will seldom be employed, since the slopes are too steep and the roading scheme is not compatible with tractor skidding. Any soil loss caused by the highlead logging will be irretrievable.

Adverse Effects Which Cannot Be Avoided - Noise and dust are created by highlead logging, although it may be less than with tractor logging. Some soil displacement will likely occur. The potential for reduction in middleground/background visual quality is higher with highlead logging since the steeper slopes are more likely to be seen from a distance, and the predominant silvicultural prescription associated with highlead is clearcutting.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls- None identified.

b. Skyline

Skyline logging methods are divided into three categories:

(1) Regular skyline - yarding distances up to 1,200 feet.

(2) Intermediate skyline - yarding distances from 1,200 to 2,000 feet. Requires the use of intermediate supports between the machine and the anchor point.

(3) Long Span - yarding distances over 2,000 feet may or may not require intermediate supports depending upon the terrain.

Other conditions that lend themselves to one of the three types of skyline logging are:

(1) Slopes are straight to slightly convex.

(2) Soils are sensitive.

(3) Silvicultural prescriptions recommend high lead tree/total tree ratios (although skyline and long span yarding is very effective in clearcut prescriptions at distances greater than 1,000 feet).

Skyline logging has minimal effect on the visual resource because logs are dragged along the ground with the leading end of the logs usually suspended above the soil. Edges of skyline units can be blended into the uncut forest with greater ease than with either tractor or highlead systems, although this creates slash-burning problems. Fewer roads are necessary because external yarding distances may be greater than for tractor or highlead systems. Skyline yarding distances vary according to topography and machinery limitations. Skyline yarding distances of up to 2,600 feet slope distance will be used where economics and resource protection dictate; however, 1,200 to 1,400 feet slope distance will

average. Due to the wide range in yarding distances, road densities will vary from four to five miles per section in short span to two to three miles per section where longer spans are used. Since roads have the longest and most permanent effect on the visual resource, the logging system which requires the least miles of road is the most desirable from a visual resource standpoint.

Skyline systems have a low potential for damage to soils except in corridors where some dragging of logs is inevitable. This dragging of logs has effects similar to highlead logging but is much less severe or intensive. The system has low potential for adverse effects on water quality or fish habitat.

Skyline systems have the capability to fully suspend logs to avoid, to the extent possible, disturbance to streams.

The topography associated with skyline systems creates problems for the disposal of slash. Hand piling and yarding of unmerchantable material are effective but expensive. Hand fireline associated with broadcast burning is also expensive.

Since soil disturbance is minimal in skyline yarded sites, fire is often necessary to bare the soil for planting. The slash must be burned in such a way that a careful balance can be maintained between exposing mineral soil and loss of control (USDA Forest Service, 1978).

Skyline logging has little effect on forage or cover. Soil disturbance occurs on only about five percent of the area, which means that forage species are not stimulated. The silvicultural system and post-logging fire have much more effect on forage and cover than skyline logging.

A well-stocked understory of trees can usually be saved by applying a skyline system to commercial thin and overstory removal prescriptions. In regeneration prescriptions, since little soil is disturbed, regeneration of tree seedlings can be a problem unless fire can be used to bare soil.

Skyline logging is more expensive than tractor or highlead logging.

Long span is currently not being used in the Forest, although some sales have been designed for their use. It is much more expensive than skyline or even intermediate skyline. It would compare to helicopter logging costs.

Short-Term Use vs. Maintenance and Enhancement of Long-Term Productivity - Since skyline logging causes less severe environmental consequences than tractor and highlead, productivity is less affected. Although there is some soil disturbance with skyline logging, less area is eroded and water quality is seldom severely lowered. Because of the lack of heavy equipment operating on the site, the low growing vegetation is not destroyed.

Irreversible and Irretrievable Commitment of Resources - When the current stand of trees is logged by the skyline system, the next generation will not necessarily be logged in the same way. However, the roads are designed to preclude use of tractor systems. If harvest is assumed for the future generations, some sort of skyline logging, or in some cases highlead, will likely be used.

Adverse Effects Which Cannot be Avoided - Despite the fact that skyline systems have fewer adverse environmental consequences than tractor and highlead systems, some soil may be lost or displaced, some fish habitat degradation may occur, and some low growing vegetation may be destroyed. Slash control will be more expensive.

Since most skyline operations are on steep slopes, any middleground/background visual quality degradation is apparent and may be visible from long distances.

This will be most apparent with clearcuts. Recreation will be degraded while the harvest is occurring because of noise and dust.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls- None identified.

3. Aerial Logging

The only aerial system currently available in the Forest is the helicopter system. A very small percentage of suitable lands will be helicopter logged. Helicopter logging will be used when the following conditions are present:

a. Harvesting by conventional logging systems would result in unacceptable resource damage.

b. Timber is out of reach of conventional logging equipment and road access is found to be uneconomical.

The maximum economic helicopter yarding flight distance is one mile. This equates to road densities of between one and two miles per section. Helicopter logging units can be blended into the uncut forest. Few roads are needed because external yarding distances are much greater than for tractor, highlead, and skyline. Helicopter logging leaves the soil surface virtually undisturbed except at landings. The landing areas are large (one to two acres) and receive high compaction. Helicopter logging disturbs less than two percent of the logging area.

Because timber is lifted clear of the ground, there is virtually no soil disturbance erosion and water quality degradation are not problems even on sensitive soils and steep slopes.

Slash disposal on helicopter logged areas is very expensive. No heavy equipment is available to pile the slash or to construct firelines. Hand piling and/or yarding of unmerchantable material can be done but this is quite expensive. As with skyline logging, the lack of mineral soil exposure can have significant effect on natural regeneration. Because of lack of access, planting and site preparation are also very expensive. Timber growth will not be manipulated through thinning.

There is considerable noise in helicopter logging areas. This can have an undesirable effect on recreationists and may affect the distribution of wildlife.

Helicopter yarding is the most expensive method of yarding.

Short-Term Use vs. Maintenance and Enhancement of Long-Term Productivity - Helicopter logging has little effect on long-term productivity because little soil is displaced. Problems with slash control and regeneration may slightly lengthen the following rotation but the productivity of the site will be maintained. When helicopter logging takes place on steep slopes, openings can be seen from long distances but recovery is rapid since there are no roads.

Irreversible and Irretrievable Commitment of Resources - Since roads are not built into the area, there is no irreversible commitment of the site to harvest in the future.

Adverse Effects Which Cannot be Avoided - If the harvest is on steep slopes, the logging operation is hard to screen and openings are usually visible for long distances. Helicopter logging is noisy. Slash control is difficult and expensive. Natural regeneration may be delayed because of lack of site preparation and mineral soil exposure.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls- None identified.

Table IV-27. Summary of Relative Costs and Other Resource Impacts Based on the Logging Method Used.

Harvesting and Associated Costs

	Fall & Buck	Skidding	Loading	Fuels Reduction	Road Construction
Highest Cost	Helicopter Skyline Highlead	Helicopter Skyline Highlead	Skyline Highlead Tractor	Helicopter Skyline Highlead	Highlead Tractor Skyline
Lowest Cost	Tractor	Tractor	Helicopter	Tractor	Helicopter

Impacts On Other Resources

	Mid/Background Visual Quality	Fisheries	Wildlife	Foreground Visual Quality	Soil Displacement
Potential For Greater Impact	Highlead Skyline Helicopter	Tractor Highlead Skyline	Tractor Highlead Skyline	Tractor Highlead Skyline	Tractor Highlead Skyline

(Table IV-27 cont.) Summary of Relative Costs and Other Resource Impacts Based on the Logging Method Used.

	Mid/Background Visual Quality	Fisheries	Wildlife	Foreground Visual Quality	Soil Displacement
Potential for Lesser Impact	Tractor	Helicopter	Helicopter	Helicopter	Helicopter
	Soil Compaction	Range			
Potential for Greater Impact	Tractor Highlead	Tractor Highlead			
Potential for Lesser Impact	Skyline Helicopter	Skyline Helicopter			

X. SLASH CONTROL

Summary of Changes Between Draft and Final

There were no changes.

Environmental Consequences

Unusable limbs, tops, and cull logs must be eliminated from a timber harvest unit before regeneration can take place. The most common method of disposal is to burn the slash on-site. In some cases, the larger material is decked and reserved for firewood. The objective of slash and fuels management is to maintain fuel loading within acceptable limits for prevention and control of wildfire. Burning also helps prepare sites for regeneration and eliminates barriers to animal movement (Lyon, 1979; Smith, 1962).

Slash may be tractor piled and burned on slopes approximately 35 percent or less, and handpiled and burned or broadcast burned regardless of slope. Where slash is not evenly distributed and a mature overstory has been left, underburning of concentrations of slash is the only effective method of slash disposal. Limbs can also be lopped and scattered in areas of low slash concentration. Slash disposal activity varies directly with timber harvest level. Alternatives which generate the highest timber harvest also generate the highest level of slash control.

Slash disposal can cause short-term degradation of foreground viewing. In broadcast burned units, residual vegetation is usually burned and the unit looks scorched and black. Visual degradation usually lasts about two years, because forbs, grasses, and shrubs resprout or seed and grow rapidly after fire. Burned dozer piles leave scars that are readily visible on-site and, in some cases, from several miles away. Burned handpiles are virtually invisible to the casual

observer after a short period of time. Hot underburns can cause scorch marks on trunks of remaining overstory and can kill lower branches. These visual effects will last until red needles fall and the scorched bark falls off.

Broadcast burning will be done when fuels are dry enough to burn: this could include spring and summer burning. Piles are burned when weather is cool and damp so control is easiest. Suitable conditions occur for only a short time in the spring and fall. The higher the timber harvest level, the greater the smoke problem (assuming similar weather conditions) because more slash will have to be burned in the short time available.

Slash is either piled for burning or a fireline is built around the unit for broadcast burning. On gentle slopes, tractors are used to pile slash in windrows. This activity has a high potential for soil compaction, disturbance, and erosion (Klock, 1975). If care is not taken, topsoil, litter, and duff can be pushed into the piles. Excessive mineral soil is then exposed to erosion. If windrows and the soil beneath them are too dry when burned, the topsoil may be baked and become sterile and water repellent (Dyrness, 1976). If this occurs, little or no vegetation will grow to protect the soil from overland flow and erosion during the several years necessary for recovery.

Handpiling and burning will have little noticeable effect on the soil. Small areas under the piles may be scorched. Handpiles are usually small and burn cool enough to cause little damage. Bennett (1962) describes methods of controlling burn intensities to reduce risk of soil damage and erosion. Soil losses caused by burning are no greater than natural rates if fires are properly managed (Glassy, 1982; USDA Forest Service, 1978).

Firelines around broadcast burn units may be a source of sediment if proper erosion control measures are not taken. Mineral soil must be exposed so fire will not creep over the line. The soil surface is then exposed to raindrop splash erosion and overland flow is likely. Waterbars to divert water from the fireline into adjacent undisturbed areas are required to minimize erosion and sediment yield.

The only measurable effect on water yield from slash disposal would occur where large areas of mineral soil are exposed and overland flow is increased by a decrease in infiltration rate. This may contribute to higher peak flows, in conjunction with road effects, in small watersheds (Ziemer, 1981). Water quality would be degraded in the same way (DeByle and Packer, 1972). Overland flow could increase sediment delivery to the streams if a sufficient undisturbed area was not present between the burned unit and the stream (Snyder, et. al., 1975).

Slash disposal may affect water quality and fishery habitat. Overland flow from burned units may also carry high levels of nutrients which will temporarily enrich the water and add to available fish food. The duration and magnitude of the nutrient flush is so short and small that detection is unlikely (Snyder, et al., 1975). Overland flow from burned units may introduce large amounts of sediment in a short time. The duration and magnitude of this response on water quality and fish habitat may be significant in a few local situations.

Slash disposal has an effect on big-game cover only when hiding cover that remains after logging must be burned. Forage may be temporarily reduced by slash disposal activities, but the reduced competition from trees and nutrients rapidly released by fire results in an increase of shrub, grass, and forb growth in the subsequent growing season. This increases the amount of available wildlife range. A totally clean forest floor is lacking cover for a wide variety of small animals, many of which depend on insects for food. The removal of all dead, down, and decaying logs removes a segment of the forest ecosystem. Some harmful insects and animals are eliminated, but beneficial ones also die or move.

Bark beetles and fungi can build up in untreated slash and spread to living trees. Elimination of slash destroys the habitat for these insects and diseases and controls their spread (Furniss and Carolin, 1977). Dozer piling in a partial cut can result in mechanical damage to residual trees and subject them to insect or disease attack.

Costs of slash disposal vary by disposal method, size and shape of unit, slope and time of year. Handpiling is more expensive than machine piling; small units may cost more per acre than larger units; and units on steep slopes are more expensive to treat than those on gentle slopes. Alternatives with higher timber outputs have higher slash disposal costs. Slash disposal is a necessary cost of timber production and, as such, has an effect on the calculation of PNV.

Slash disposal requirements depend on the acres of timber harvested each year. Some slash management will be required on practically every acre. The average number of areas requiring fuel treatment is shown in Table IV-28.

Slash disposal activities affect recreation by creating smoke which may degrade air quality enough to cause local short-term problems. Units harvested but unburned may be nearly impassable to people if slash loads are high. The problem would be greater in high timber output alternatives and when poor weather for burning causes a time lag between harvest and slash disposal.

Table IV-28. Average Annual Fuel Treatment (Acres)

	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
Dec. 1	7100	9100	8600	7200	6500	6300	6600	7900	5700	4900	7200	11200	12400	0

Fuel treatment acres are based on timber harvest acres. The significant increase in treatment acres for Preferred Alternative K reflects the increase in selection harvest acres in the riparian management area.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Slash management, if properly done, has little effect on long-term productivity. Productivity is adversely affected if slash is not treated or if slash is treated poorly. There is always a chance in machine piling and windrowing for excess soil to be displaced and erosion to occur and fertility is lost. Burning at the wrong time and allowing the fire to be too hot generally has the same effect. Most other effects of slash management are short-term and have little effect on productivity.

Irreversible and Irretrievable Commitments of Resources - The purpose of slash management is to provide a suitable site for management of another generation of trees. Some potential firewood may be burned.

Adverse Effects Which Cannot Be Avoided - The most obvious adverse effect is the generation of smoke into the atmosphere. Though this effect is short lived, the more acres treated, the more smoke. Other adverse effects include the scorched and blackened vistas which are also short-lived.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls - Slash burning can be in conflict with clean air standards.

Y. SITE PREPARATION

Summary of Changes Between Draft and Final

There were no major changes.

Environmental Consequences

The objectives of site preparation are to remove physical barriers to reforestation and/or create favorable microsites for tree seedling survival and growth. Site preparation involves the removal of competing vegetation and the exposure of some mineral soils. This is necessary to insure adequate soil moisture in the rooting zone of the seedling during the establishment phase of the regeneration program.

Site preparation is usually associated with logging and slash disposal activities. Tractors used to skid logs and pile slash displace litter and other organic matter usually result in enough exposed mineral soil to provide planting sites. Cable logging displaces some topsoil and broadcast burning or burning handpiles results in some spots where mineral topsoil is exposed. In units where insufficient mineral soil is exposed or competing vegetation has had time to regenerate, the soil surface must be scarified or the competing vegetation removed before planting. Scarification can be done by dozers or other machines on gentle slopes, but is done by hand on steeper slopes.

There are other options available for site preparation. Among these are the use of domestic animals and herbicides. The prescriptions developed for reforestation in alternatives do not specifically call for the use of either method. Any proposed use of these forms of site preparation in the future will be preceded by all required analysis. The type and intensity of site preparation required to provide conditions most favorable for seedling survival vary depending on local factors such as slope, aspect, rainfall amounts, the specific requirements of the tree species being regenerated and the method of reforestation planned, i.e. natural or planted.

Prescribed fires used in site preparation and in forest fuel reduction occasionally escape control and result in resource damage and high suppression costs. The chance of escaped prescribed fire varies for each alternative and is correlated with the number of acres to be harvested by alternative.

Site preparation often results in soil disturbance and exposure over large areas. These areas are susceptible to raindrop splash, overland flow, and soil erosion.

Table IV-29. Average Annual Site Preparation Acres

	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
Dec. 1	8137	10837	9968	8439	7840	7855	8000	9192	6553	6102	8404	10775	15123	0

The site preparation acres shown for each alternative correspond to the number of acres planned for reforestation by natural or artificial methods. The alternatives which assume higher reforestation and timber harvest levels will show the highest amount of site preparation. The increase in acres for Alternative K (Preferred Alternative) reflects the increase in restocking nonstocked areas.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Timber productivity of sites depends in part on how quickly trees are established after harvest. Adequate site preparation is necessary to ensure seedling survival and to give them a good start for competition with other vegetation. Site preparation activities have the potential to reduce long-term site productivity by displacing the nutrient rich topsoil or compacting the soils in the upper soil horizons.

Irreversible and Irretrievable Commitment of Resources - Any soil loss or displacement that causes a reduction in site productivity is irretrievable. Measurable losses in productivity as a result of site preparation will be rare when preparation is done according to management standards.

Adverse Effects Which Cannot be Avoided - The unsightly appearance of areas that have been prepared for regeneration is unavoidable and will remain until vegetation grows and screens the effect from view. If burning is used, smoke is produced. The noise and scars of site preparation can affect recreation, at least for a short time.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls- If burning is used in site preparation, there is a possibility of conflict with the Clean Air Act. Coordination with the regulatory agencies are provided for in the Forest Plan to minimize conflicts.

Z. REFORESTATION

Summary of Changes Between Draft and Final

Alternative K (Preferred Alternative) reflects a substantial increase over comparable alternatives with similar harvest levels, because of the increase in restocking of nonstocked areas.

Environmental Consequences

Reforestation occurs after timber harvesting and slash disposal/site preparation are completed. Reforestation of the Clearwater Forest will be accomplished by natural regeneration and artificial regeneration (planting). The acreage of reforestation in Table IV-30 includes both. The total area to be reforested varies according to the timber output of the alternative.

Alternatives with higher timber outputs will require more acres of reforestation. The specific type of reforestation to be applied,--natural or artificial--will vary depending on the capability and limitations of the landtype, tree species, and type of regeneration harvest used. Reforestation is also scheduled to occur in harvest units where past reforestation efforts have failed and in old burned over areas that have not regenerated. These acres are reflected in the first decade reforestation acres in Table IV-30.

Table IV-30. Average Annual Reforestation - Decades 1 to 5 (acres)

	A (cd)	B	C	D	E	E1	F
Decade 1	8137	10837	9968	8439	7840	7855	8000
Decade 2	9815	10828	9919	9526	9127	10673	9042
Decade 3	9480	9472	9152	9251	7510	10047	7172
Decade 4	10459	11406	10641	9624	8679	9965	8659
Decade 5	10457	10866	10018	9268	8491	29586	8304

	G	H	I	J	K (pa)	MAX PNV	MIN LVL
Decade 1	9192	6553	6102	8404	10775	15123	0
Decade 2	10122	6929	6694	9490	9729	16397	0
Decade 3	8696	6255	5075	7995	9320	15475	0
Decade 4	10140	7122	6053	9564	10598	15340	0
Decade 5	9917	7519	5869	9291	11799	19444	0

The acres of reforestation in the first two decades include the areas planned for harvest and the acres identified for needed reforestation. The planting of the areas in need of reforestation is accomplished in the first and second decades.

After the second decade, the amount of reforestation to be done in each alternative is directly tied to the area to be harvested. The primary environmental effect of planned reforestation is the relatively rapid regeneration of trees. This results in rapid recovery of the visual character of the landscape, and protection of the soil from erosion. Rapid regeneration causes forage to decrease because of shading and competition of the growing trees but speeds the process of recovery of big-game hiding cover.

Those alternatives with the greatest acreages of reforestation have the potential to provide the most beneficial effects on timber production. The degree to which this potential is achieved depends on the rate at which the existing mature and over-mature sawtimber acres are converted to regenerated stands. The potential benefits include higher production levels of wood fiber, increased stand vigor, lessened susceptibility to insects and disease and increased size and age diversity (Smith, 1962).

Delaying entry into and subsequent regeneration of existing sawtimber stands will have negative impacts on timber production, primarily the inverse of the benefits listed above. The magnitude of the impacts is a function of the length of the delay and the number of acres affected. Delaying entry by 100 to 150 years or more is likely to cause changes in stand characteristics due to natural successional processes. Changes in stand structure and species composition will have significant impacts on expected timber volume and values, (See planning records on timber values and yield tables.)

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Planting can have an effect on productivity of the next generation of trees. The stand is quickly established and begins to grow. This shortens the time for next harvest. Other species or a mix of species can be introduced on the site, if compatible, and lessen the loss to insects and diseases in addition to producing more wood fiber. These activities should not affect the productivity of the site and will give quicker protection to the soils by producing a rapid overstory. Though this rapid growth of timber will reduce the forage available to livestock or big game, it will also provide hiding cover and protection from cold.

Irreversible and Irretrievable Commitment of Resources - The only irretrievable commitment associated with reforestation efforts would be in cases where trees are not planted or when planting fails. The fiber lost during this period of time could not be recovered.

Adverse Effects Which Cannot be Avoided - Due to the unpredictable nature of factors that have a significant impact on reforestation, such as weather and cone crops, some initial reforestation efforts may fail.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls- None identified.

AA. TIMBER STAND IMPROVEMENT

Summary of Changes Between Draft and Final

There were no major changes.

Environmental Consequences

Precommercial thinning is the primary activity associated with timber stand improvement. It occurs when the regenerated stand is about 15 to 20 years old (too small for commercial products). The objective is to reduce competition among crop trees so maximum growth per tree is realized and to improve the

species mix leaving a higher proportion of the faster growing, more valuable seral species (white pine, Douglas-fir, ponderosa pine, and western larch). The resulting fewer but larger trees are more valuable at the time of harvest.

Thinning to extremely low stocking levels can affect stand productivity by under-utilizing the site potential.

All seedling and sapling stands, as well as most regenerated stands, will be managed to maintain stocking levels of 225 to 450 trees per acre at 20 to 30 years of age. The exact stocking level is dependent on productivity class, existing stocking levels and management intensity. To achieve the desired stocking level, it is necessary to precommercially thin overly dense stands. In others, initial stocking levels from the reforestation effort may result in the desired level of stocking without precommercial thinning. Where natural regeneration is planned as the primary or secondary reforestation method, overstocking or uneven distribution is more likely to result, necessitating precommercial thinning. Timber stand improvement (TSI) is related to the suitable acres for timber management and the associated management intensity, so the alternatives which assume the most intensive timber management will include the most acres recommended for TSI. The increase in acres prescribed for TSI in Alternative E1 results from relaxing the nondeclining sustained yield constraint. The average number of acres anticipated for TSI in each alternative is shown in Table IV-31. The decrease in TSI in the Preferred Alternative K reflects a change in modeling in FORPLAN.

Table IV-31. Timber Stand Improvement (Acres)

	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
Dec. 1	2481	3308	3040	2472	2204	3610	2302	2758	2080	1767	2472	1928	7077	0

Thinning can have a minor adverse effect on viewing from the foreground until the slash decays or is otherwise disposed of. The more open aspects of the thinned stands are not likely to be noticed.

The slash created by thinning poses a short-term fire hazard. Broadcast or underburning is not possible without damage to the remaining trees, and burning handpiles can cause considerable damage also. The relatively fine fuels are packed down by snow and decay within one or two years, so the risk of losing the thinned stand to fire is low.

Thinned stands produce slightly more forage for a short time after thinning but this advantage is soon lost due to the rapidly expanding canopy of the remaining trees. The resulting slash is usually an impediment to animal travel within the stand. Cover for big game may be reduced by thinning but recovers rapidly as the remaining trees occupy the available space (Thomas, et al., 1979). A more or less diverse stand can result from thinning depending upon the objectives for the species designated to remain as crop trees. If a mix of species is desired, thinning to emphasize one species would be a detriment to diversity and could

affect the habitat of certain small animals, birds, and insects. The removal of insect infested, diseased, and slow growing trees will result in a healthy, vigorous stand.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Thinning is unlikely to affect the productivity of wood fiber. The probability exists that the final product following thinning may be more useful, which is the primary rationale behind the procedure.

Irreversible and Irretrievable Commitment of Resources - Thinning to stocking levels below optimum will result in some volume losses over the rotation period.

Adverse Effects Which Cannot Be Avoided - Some of the slash created by thinning will likely not be treated. This will present a fire hazard for a few years after thinning. Loss of cover will reduce or eliminate big-game use of the areas. The visual resource will be adversely affected for a short period of time.

Conflicts with Objectives of Other Land Management Plans, Policies and Controls- None identified.

BB. ROAD SYSTEM

This section consists of two parts, the first part includes a discussion of road construction and maintenance, the second part includes a discussion of road management.

1. Road Construction, Reconstruction, and Maintenance

Summary of Changes Between Draft and Final

The increased ASQ in the Preferred Alternative K and the regeneration harvest constraint in decades one and two, results in 69 miles per year of road construction in the Preferred Alternative K on the roaded area.

Overall water quality standards remain the same except: *

a. Because of lower quality fish habitat needs, the standards in several streams were lowered in the developed portion of the Forest.

b. Direction was included to consider impacts from logging on interspersed private land when planning Forest timber sales and roads in the Powell and Kelly Creek areas.

c. Standards were added that require special analysis of problem soils, i.e., prone to mass wasting or regeneration problems. Site specific analysis would also be required to determine if an area can be safely roaded or logged.

* Although water quality standards are not considered an activity, they are included under the roads section since the two are closely related.

Environmental Consequences

Roads provide access for Forest users and for administrative activities. Road construction, reconstruction, and maintenance have one of the most significant impacts, affecting most other resources and uses. Most of the roads scheduled to be built under each alternative are in response to timber harvest. Most all new roads are closed after timber harvest and cannot be used except for timber harvest. These include mineral exploration and development, fire protection, recreation, and general administration. Total arterial, collector and local road construction mileage by alternative is shown in Table IV-32.

Table IV-32. Road Construction - Average Annual

	Alternatives/Benchmarks													
	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
Decades														
1	62	69	64	62	62	61	55	61	43	29	62	69	119	0
2	90	84	83	70	77	77	54	70	41	25	70	60	87	0
3	73	69	67	65	61	82	62	75	49	33	65	39	125	0
4	75	116	104	65	58	88	60	66	51	35	63	53	141	0
5	33	52	45	28	20	85	31	38	30	23	28	51	89	0
10	20	18	19	17	15	12	13	18	17	11	17	12	15	0
* Total Needed	9904	10544	10284	9114	9114	9474	8294	9324	7724	6584	9154	8697	11124	4234

* The total miles of road needed for management is for all decades. (See planning records for miles for each decade.) These totals also includes 4,234 miles of existing road.

Road construction will be directly related to the volumes of timber harvested. In all alternatives, all collector and arterial roads are scheduled to be built by the fourth decade. After that point, the reduced level of construction represents only local roads. The majority of roads would be built by the end of the seventh or eighth decade in all alternatives. These figures do not include all the temporary roads that will be reclaimed after use and which serve only a single use. The Forest averages one mile of temporary road for every five miles of system road.

Placement, standards, closures, and final mileages of road construction are dictated by soil, water, fisheries, wildlife, harvest system, and harvest type. These constraints can increase or decrease the final inventory mileages and the costs of development and maintenance. Each alternative provides a different mix of management prescriptions and different road densities. Road development also varies by area depending on the objectives of each alternative. Also amounts of roads closed to public access vary by alternative.

Alternative A (current direction), B, and C provide for high levels of market commodity production and require the most roads. Alternatives H and I require the least because they emphasis semiprimitive recreation, wilderness, and other amenity values. The other alternatives feature moderate amounts of roads and more mitigation to alleviate adverse impacts of road construction and use.

Preferred Alternative K requires 69 miles of road construction the first decade which is the same as Alternative B, even though the ASQ is less (173 MMBF compared to 213 MMBF. The additional miles are because:

(1) The constraint on regeneration harvest within the roaded area the first decade requires additional roads in the roadless areas designated for timber.

(2) A 15 percent access constraint for the first decade is assigned to all alternatives except K.

The access constraint for Preferred Alternative K was raised to 30 percent. This constraint still allows the Forest to maintain water quality standards. Alternative B with minimum water quality standards on all lands is able to harvest more timber on the roaded portion of the Forest even though it has a 15 percent access constraint on the roadless area.

Road construction and maintenance has a greater effect on wildlife habitat, particularly big-game habitat, than any other Forest management activity. The primary effect is increased vehicle access that results in loss of security areas, displacement of animals, increased competition among animals for more limited resources and increased vulnerability of animals to both legal and illegal harvest.

Road construction and associated activities on big-game winter range causes few problems for the animals because construction activity normally occurs when few or no animals are present. Roads improve access for habitat improvement on winter ranges through timber harvest. Habitat for some small animals will be destroyed but other habitat may be created for those animals who exist along the edge of the forest.

Road construction activity on big-game summer range displaces the animals. The displacement is usually beyond a topographic barrier (Lyon, 1985). Road building can be scheduled to avoid activity in adjacent drainages to provide a secure area for animals to move. However, this displacement of one population segment into another area could result in increased competition for space and forage if these are limited.

Many potential wildlife impacts are mitigated through road design, closures, and location. This involves opening windrows at game trails, and at regular intervals for game passage, reducing cuts and fills on major ridge crossings, and avoiding meadows, wallows, ridges and saddles regularly used by big game. Additional mitigation measures are applied through road closures and timber sale scheduling.

Management Area C4 (big-game winter range) requires vehicle use restrictions during critical winter elk use periods. Management Areas C2S and C6S (big-game summer range) provide for 75 percent habitat potential require road closures during certain times to minimize animal disturbance.

Management Area C8S, which was developed between the Draft and Final plan, provides for 75 plus percent elk habitat potential by requiring all new roads to be closed permanently to public motorized use. This Management Area is applicable only to the Preferred Alternative K which was developed in response to public concern over elk populations in summer range areas designated for timber management.

Roads provide access for increased motorized recreation, but decrease the lands available for primitive or semiprimitive recreation and preclude official designation as wilderness. People desiring this type of recreation will either go somewhere else or use the same area for a different type of recreation. The B1, B2, and A3 Management Areas are designed to provide for these experiences. Management Areas C1, C3, and C6 also provide areas with few or no roads so that semiprimitive recreation may be experienced in these areas.

Road construction will affect the basic character of the landscape by changing its color, texture, or line. Where visual management is a prime concern, the visual effects can be reduced by leaving vegetative screens, seeding, etc. Cut and fill heights can be reduced in high visibility areas to lessen the impacts along with vegetative screens below the road prisms. Management Areas A2, A4, A5, A6, and A7 are designed to protect and enhance visual quality. Standards will protect visual quality in other important areas.

Roading will access areas which have historic and prehistoric cultural resource sites. Present laws require field survey prior to any disturbance. Therefore, road location and construction will be monitored to reduce the risk of losing or damaging sites. Alternatives with more roads increase the thoroughness of cultural resource surveys but also increase the risk of vandalism.

Roads and road construction have one of the most significant impacts of any activity on the soil and water resource through erosion and sedimentation (Megahan, 1972; Megahan and Kidd, 1972). Construction activities cause the disturbance of soil which results in erosion, increased sediment in the streams, and degraded water quality. These effects vary by the amount of roads constructed, the season of construction, the types of soils and geology, steepness of slopes, and mitigation measures applied. These effects can and will be mitigated through road design, controlling season of construction, location especially at stream crossings, sediment control (slash windrows, etc.), control of construction practices, and good maintenance techniques. Management Areas C6, C6S, C8S, and M2 and forest water quality standards and guidelines are designed to eliminate or mitigate adverse impacts of road construction on water quality and fish habitat.

Water quality/fishery standards of the Forest Plan also mitigate and control adverse impacts of road construction and resource management by limiting amounts of sediment that enter the streams. Table IV-33 below shows percent of total anadromous smolts and resident fish habitat assigned to various fishery management standards in each alternative. (See Glossary, Chapter VIII for further definitions of fishery standards.)

Table IV-33

Percent of Total Watershed Acres
Assigned to Each Habitat Fishery Standard

	Min LVL	MAX PNV	ALT A	ALT B	ALT C	ALT D	ALT E	ALT E1	ALT F	ALT G	ALT H	ALT I	ALT J	ALT K
Water Quality/Fishery Standard for **Resident Habitat** - Percent														
No Effect	100	3	18	3	5	29	24	24	41	31	52	65	29	22
High Fishable	0	0	0	0	0	61	68	68	49	0	38	25	61	52
Moderate Fishable	0	0	72	0	85	2	0	0	2	0	7	7	2	3
Low Fishable	0	0	7	94	7	5	5	5	5	66	3	3	5	10
Minimum Viable	0	97	3	3	3	3	3	3	3	3	0	0	3	13
Water Quality/Fishery Standard for **Anadromous Habitat** - Percent														
No Effect	100	11	28	10	11	32	33	33	39	34	45	63	32	58
High Fishable	0	0	0	0	0	63	66	66	56	0	60	32	63	42
Moderate Fishable	0	0	67	0	85	4	0	0	4	0	4	4	4	0
Low Fishable	0	0	4	89	3	0	0	0	0	65	1	1	0	0
Minimum Viable	0	89	1	1	1	1	1	1	1	1	0	0	1	0

Alternatives D, E, F, H, I, and K (Preferred Alternative) are most constrained by fishery water quality objectives while A (current direction), B, C, and G have the least constraints.

The amount of sediment in a stream system above the natural rate can be directly related to loss in potential fish habitat (Stowell, et al, 1984). Excess sediment adversely affects fisheries by reducing water flow to developing eggs, blocking young fry from emerging from the spawning gravels, destroying food organisms, and filling in summer and winter rearing habitats. The results of each alternative on potential fish habitat are illustrated in Table IV-34.

Table IV-34. Potential Fish Habitat Expressed in Thousands of Anadromous (steelhead trout and chinook salmon) and Resident Trout (smolts) by Alternative (Fifth Decade) and Percent of Maximum Biological Potential

	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
Steelhead+	206	137	222	243	249	204	242	222	228	243	243	238	140	288
Percent	72	48	77	84	86	71	84	77	79	84	84	83	49	100
Chinook *	340	189	340	362	367	243	342	341	362	361	362	353	170	429
Percent	79	44	79	84	86	57	80	79	84	84	84	82	40	100
Resident Trout **	510	509	490	535	535	536	534	469	534	535	534	495	320	598
Percent	95	85	82	89	89	90	89	78	89	89	89	83	54	100

\+ Steelhead Current 252.0
* Chinook Current 319.5
** Trout Current 523.6

Potential for steelhead trout smolts in all alternatives decrease from the current potential level (1980 base) and except for Alternative B, vary from 72 to 86 percent of the minimum level benchmark. The minimum level benchmark is used as a basis of comparison. It assumes 1) no development, therefore, no increase in sediment level above natural and 2) recovery of current degraded streams. Habitat improvement tends to keep steelhead habitat from being degraded further than it is in the other alternatives. Decreases reach a stable level generally by the fifth decade which parallels the completion of most of the major road systems.

Potential chinook salmon smolts increase in all alternatives (except B and E1) above the current potential level, even though the increases are less than the minimum level (benchmark). The percentages of minimum level vary from 44 percent (Alternative B) to 86 percent (Alternative E). Although steelhead and chinook spawn in some of the same streams, scheduled road construction and timber harvests vary by alternative and drainage accounting for different effects for each species. Mitigation is accomplished through direct habitat improvement and specific constraints on road construction and timber harvesting practices.

Resident trout smolt numbers do not vary as much as anadromous fish nor do they show a consistent relationship with timber harvest and road building. One reason is less road construction and timber harvesting in resident fishery streams, caused by smaller amounts of merchantable timber and constraints from watershed and other resources. A second reason is that many of the resident fisheries streams are already roaded or partly roaded so subsequent logging does not produce extensive sedimentation. A third reason is that several of the larger drainages such as Kelly Cayuse, Toboggan Colt, Fish and Hungery Creeks fall within management areas that will be managed without roads and with commercial timber harvesting prohibited.

Although water quality standards assumes a 100 percent recovery of a degraded stream at some point in the future, fishery standards assume a maximum of a 90 percent recovery following development and degradation.

Should sediment producing actions cease, fish habitat could improve but only to a point reflective of the background sediment level maintained by the existing road network and not above 90 percent of natural levels. The reverse is also true. If sediment producing activities increased above that stated in specific drainage objectives in the alternatives, fish habitat would further deteriorate.

Since roads probably cause 80 to 90 percent of the erosion and sedimentation of an area (Megahan, 1972), roads that are constructed through or adjacent to riparian areas can significantly affect stream channel stability, water quality, and fishery habitat (Woolridge, 1979; Bjornn, 1974; Richie, 1972; Thornson, 1976). The riparian prescription, therefore, limits road densities and location in riparian areas.

Increased access into unroaded areas also puts increased fishing pressure on wild cutthroat trout populations. These fish are very sensitive to fishing pressure and fish numbers could decline in newly accessed areas (Johnson and Bjornn, 1978.)

Table IV-35 displays the anticipated average annual sediment yield for the areas suitable for timber in the Forest in the first and fifth decade. The figure given is the predicted yield above the natural background levels and is attributable to roads and logging activities.

Table IV-35. Average Annual Sediment Yield above * Natural Levels (Tons/Square Mile/Year)

	Alternatives/Benchmarks													
Decade	A (cd)	B	C	D	E	E1	F	G	H	I	J	K (pa)	MAX PNV	MIN LVL
1	18	22	20	16	15	16	15	18	12	9	16	11	39	0
5	25	44	37	16	12	36	17	26	16	17	15	12	39	0
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

* Natural level with no management is approximately 20 tons/sq mi/year

Those alternatives which require a higher level of commodity outputs also require more roads to achieve those outputs. The effects on water and fish resources from sediment are watershed specific. The totals presented in Table IV-35 are for relative comparisons of alternatives only.

Since water yield increases are a function primarily of the total area harvested (percentage of crown removal) and the silvicultural treatment applied (USDA, 1975; Andersen, Hoover, and Reinhart, 1976; Troendle and Leaf, 1980), roads do not substantially influence these annual yields. However, roads and their ditch systems may contribute to higher peak flows in small watersheds (Ziemer,1981).

Preferred Alternative K which shows approximately 60 percent less sediment in the first decade compared to Alternative E is a result of a major FORPLAN modeling changes for the Preferred Alternative K. See EIS, Appendix B, Section VIII, E, for a more detailed explanation of this change.

In all alternatives, road building and timber harvest activities are designed to mitigate effects on stream environments. All proposed road construction is assumed to provide at least 60 percent mitigation of surface eroded sediment generated (planning records). This means that 60 percent of the potential soil that could move off a road prism and become sediment in a stream will be controlled outside of the water system (stream). This level of sediment mitigation requires the best management practices that comply with the intent of the Idaho Forest Practices Act (planning records). In many cases, a higher percentage of mitigation will be achieved. (See also Soil and Water conservation practices Handbook FSH 2509.22, Amendment No. 1, Draft 2186.)

All alternatives incorporate road location and design standards to control mass and surface erosion from road prisms and to limit sediment delivery to streams, helping mitigate the impacts of road construction on soil and water. Surfacing will be employed where necessary for erosion control purposes rather than to increase the load-bearing capabilities of the road or to extend the season of use. Filter windrows, seeding, and fertilizing are standard practices near stream crossings. Roads will generally be full benched (without fills) on slopes 55 percent or greater in critical areas (watersheds, etc.). Additional sediment control measures, such as netting, mulch, sediment traps, armoring of ditches, aggregate surfacing, and reduced spacing of cross drains would be specified where warranted. Road construction will strive to "fit the terrain" and minimize cut and fill heights. Traffic restrictions may be imposed during the wet seasons to protect road surfaces from erosion and minimize reconstruction and maintenance needs.

Road costs tend to increase exponentially with more intensive mitigation. For example: If 60 percent sediment mitigation costs $1,000 per mile, 80 percent might cost $15,000 per mile. The differences are the cost of gravel, increased drainage features, and additional cut and fill slope protection. Mitigations applied to the most sensitive portion of a road serve to effectively mitigate the entire road. Mitigation measures may increase total road cost 10 to 20 percent.

The fisheries/water quality standards are the primary control on road construction in the first two decades of all alternatives. These constraints restrict the amount of timber harvest.

Between four and six acres of land from the top of the cut to the bottom of the fill slope are disturbed for every mile of road built. This area will not be managed for fiber in the future. Natural regeneration may occur along cut and fill slopes, but it is unlikely that merchantable timber will be produced. The substrate in road prisms is usually infertile.

Road construction is a capital investment allowing land access for timber harvest and other management activities. Roads may be built by contractors, which can be a significant benefit to the local economy. Road construction is a major cost in all alternatives, averaging 40 to 50 percent of the total costs to the government of each alternative. The cost reduces returns to the U.S. Treasury, but is necessary for timber harvest. Road costs nationally run seven to ten percent of the total harvesting and manufacturing cost. Briefing paper on Forest Development Roads, by Walt Furer, USFS, USDA, Nov. 1985.

Logging systems and transportation systems are planned concurrently to insure that the most cost efficient harvesting system is implemented, while recognizing all resources and land activities. See Logging Methods, Section W, of this chapter.

Roads built into unroaded areas increase the potential for man-caused fires. However, this same access makes fire suppression easier by allowing quick delivery of firefighters. In addition, roads serve as fuelbreaks.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Construction of roads has a long-term effect on vegetative productivity. Even though efforts may be made to rehabilitate a road, the road bed itself and the cut and fill slopes will not produce timber. If the roads remain active, this acreage is removed from the vegetative production capacity of the area. On the other hand, roads allow timber harvest, which can have a positive effect on the future productivity of the overall area.

Roads remove the habitat of small animals and birds even though the edge of roads may create habitat for others. Roads change the type of recreation which in the area. Actively traveled roads can have a harmful effect on the movement of big-game animals. Roads can have a lasting, severe impact on the visual resource. Roads continue to produce sediment after the initial construction. This background level of sediment can reduce the long-term productivity of the fishery and delay recovery of the habitat.

Irreversible and Irretrievable Commitment of Resources - Road construction is an irreversible commitment of resources since roads are essentially permanent features of the landscape. If roads are not built, timber cannot be economically harvested and an irretrievable loss of that resource occurs. If roads are built, potential wilderness, primitive and semiprimitive recreation, and roadless wildlife habitat are irretrievably lost. Managing lands for commodity uses which tend to degrade fish habitat is an irreversible commitment of resources. Mitigating measures minimize this degradation.

Adverse Effects Which Cannot Be Avoided - Roads can adversely impact the visual resource. Wildlife habitat and wildlife movement patterns can be disrupted. Roadless recreation is lost and potential wilderness is foregone. Road construction and maintenance cause the greatest amount of soil disturbance and erosion. Water quality and fish habitat carrying capacity is lowered.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls - Elk are considered to be the premium big-game species by the Idaho Department of Fish and Game. The Department's elk population objectives for the Forest are essentially met in alternatives B, C, D, E, E1, F, J, and K (Preferred Alternative).

There may be conflicts with Indian Tribes treaty rights and trust responsibility as it pertains to the anadromous fishery. Since the projected populations fluctuate between alternatives, it is likely that amounts of fish available for Indian Tribes use downstream may be less than desired under some alternatives. There also are many downstream factors affecting the fishery that are beyond the Forest's control. Commercial and sport fishing, hydroelectric dams, all hatchery success (or failures) as well as other downstream environmental factors all contribute to the overall fishery available to Indian Tribes.

2. Road Management

The objective of road management is to allow maximum public use of the road system consistent with protection of other resources. Road closures are authorized in the Code of Federal Regulations, Title 36 Part 261.

Roads are closed for the following reasons:

a. Protection of Wildlife Habitat - Roads are closed to protect critical areas where threatened and endangered species or big-game animals live. These areas are sensitive and often include winter range, calving grounds, or security areas. These same areas are often open to vehicle-use during other times of the year when big game are less likely to be disturbed. The Idaho Department of Fish and Game is a cooperator in this effort.

b. Water Quality and Erosion Control - Some roads and trails are closed during wet weather to prevent rutting and other roadbed damage. This reduces erosion and the amount of sediment that can be transported to streams. Sediment is a serious threat to spawning and rearing grounds for steelhead, salmon, and other fish. Closing roads during wet weather reduces road maintenance costs.

c. Public Safety - In some specific instances certain types of travel are prohibited to insure user safety.

d. **Conflict of Use** - In a few cases it has become necessary to give preference to one use over another to resolve problems that exist between competing user groups, insuring that adequate opportunity exists elsewhere for the use prohibited. This is common between nonmotorized and motorized forms of recreation where, for example, a popular hiking trail might also be frequented by motorbike riders, horses, or packstock.

f. **Legal Mandates** - Some areas such as wildernesses are afforded special protection by Federal law. For example, it is unlawful to have possession of and operate any motorized equipment within a classified wilderness (36 CFR 261.16, 293.17, and 261.19 USC 551).

Approximately 41 percent of all roads in the Forest have various seasonal or yearlong closures as of 1987. Existing road closures are shown below:

1. Number of road closure devices by type.	
a. Signs only	23
b. Gates	325
c. Barricades (concrete, metal, wooden, etc.)	47
d. Natural closures (berms, ditches, etc.)	146
2. Miles of road with public use restrictions.	
a. Yearlong	399
b. Seasonal (other than spring breakup)	631
3. Miles of road closed to all use.	
a. Yearlong	386
b. Seasonal (other than spring breakup)	249

During the portion of the year that roaded areas are open to motorized access, these roads provide opportunities for recreation like firewood gathering, pleasure driving, snowmobiling, motorcycling, vehicle hunting and camping. Open roads allow the handicapped, elderly, families with young children, and visitors desiring short-time recreation to participate in outdoor recreation. During the portion of the year that roaded areas are closed to motorized access, opportunities are provided for hunting on foot or on horseback near roads and cutting units. In both cases, the recreation is classed as roaded natural, not semiprimitive, because the setting and the experience have been changed by the presence of roads and openings created by timber harvest.

Once roads are in place, increased human access to the Forest poses the greatest adverse impact on wildlife (Flynn, 1982; Lyon, 1975-79; Thomas and Toweill, 1982). If roads are designed properly and located to avoid areas of critical elk habitat; such as, calving areas, wallows, moist areas, etc., the roads themselves have insignificant impacts on elk (Lyon, et al., 1985). It is the use of the roads by people that impacts elk. Human activities and encounters can disturb elk calving areas, summer and winter ranges, animal migration routes, forage areas and security areas. Potential effects include displacement of animals from their historic ranges, competition among animals and increased vulnerability of animals to both legal and illegal harvest.

Controlling use of many Forest roads in critical wildlife habitat is essential during the period that these habitats are used by animals. Control of vehicle access into critical habitats accomplishes several things: 1) it maintains the capacity of the land to produce healthy, productive, and stable wildlife populations; 2) it provides year-round security habitat needed by wildlife; 3) it reduces the vulnerability of big-game animals to both illegal and legal harvest; and (4) it helps maintain over the long-term the type of hunting season that both resident and nonresident hunters expect in Idaho: the freedom of choice of when, where and how to hunt; the lengthy hunting season; and few permit and license restrictions compared to many surrounding western States.

As a result of public involvement between the Draft and Final plan and EIS, a new management area was developed that would increase the protection of elk summer habitat. The new Management Area (C8S) applicable only to Alternative K (Preferred Alternative). In the Preferred Alternative K all new road construction is closed to motorized public use during periods of elk use. Trails will remain open for ORV use in most cases until an area is roaded then the entire area will be closed to public motorized use.

Roads will be closed to protect other resource values in all alternatives, but the amount will vary based on the goals and objectives and mix of management areas in each alternative. Management Areas like C2S, C6S, and C4 will allow between 0.5 mile and 1.0 mile of open roads per square mile. Management Area E1 allows up to 4-5 miles of open road per square mile.

Therefore alternatives with the greatest number of acres of C2S and C6S will have the most roads closed other than K. Alternatives with high amounts of Management Area (E1) will have the least amount of closed roads. The actual roads closed will be based on a project by project analysis using Wildlife Bulletin No. 11, Idaho Department of Fish and Game, "Evaluating and Managing Summer Elk Habitat" for wildlife habitat evaluation.

Short-term Use vs. Maintenance and Enhancement of Long-term Productivity - Some opportunities for roaded recreation are lost, but wildlife habitat is enhanced.

Irreversible and Irretrievable Commitment of Resources - Opportunities for developed and motorized recreation may be lost when roads are closed. Some areas may be closed to firewood cutting.

Adverse Effects Which Cannot Be Avoided - Some public opinion is against road closures.

Conflicts with Objectives of Other Land Management Plans, Policies and Controls - Forest road closures may conflict with the goals of local four-wheel drive and trail bike clubs. The Idaho Fish and Game Department supports these closures to provide a quality big-game hunting experience in a primitive or semiprimitive environment.

CC. WATERSHED IMPROVEMENT AND MAINTENANCE

Summary of Changes Between Draft and Final

We have added a number of watershed rehabilitation projects to Alternative K (Preferred Alternative).

Environmental Consequences

Specific soil and water improvement and rehabilitation projects are designed to improve and conserve basic soil productivity and secure favorable conditions of water flow, including water quality. They are closely coordinated with fishery habitat improvement. Like fishery habitat improvement, they affect small acreages, but their beneficial effects may improve a large portion of a stream system and its resources. Maintenance of water quality by controlling sediment production from road construction and timber harvest is discussed in other appropriate sections of this chapter.

Specific watershed improvement projects include channel erosion control, flood and fire rehabilitation, stabilization, debris removal, and restoration of overused sites. Each project is important to the few acres or short stretch of stream involved. Effects range from minimizing soil erosion along streambanks, to preventing channel instability by removing debris, armoring banks, and controlling stream energy, curtailing sediment production by cleanup and restoration of old erosive "glory holes," waste dumps, and spur roads, and similar actions. Effects will include improvement of fish habitat in and downstream from the project. Each project will be subjected to analysis under NEPA procedures prior to initiation and the effects will be identified.

Short-term Use vs. Maintenance and Enhancement of Long-Term Productivity - The few acres of specific watershed improvement projects each year will have an effect on the specific sites. Streambank stabilization and debris removal will protect or improve water quality, not only on the site, but also downstream from the site. This will positively affect the long-term potential fishery habitat. Areas that are restored to prevent erosion and sedimentation will eventually return to original vegetative condition and productivity.

Irreversible and Irretrievable Commitments of Resources - There are few irreversible or irretrievable commitments of resources associated with watershed improvement projects.

Adverse Effects Which Cannot Be Avoided - When working in streams to stabilize channels and remove debris, the stream bottom will be disturbed and water quality will deteriorate for a short period of time. This may have minor, short-term effects on the fish and insects which occupy these areas.

Conflicts With Objectives of Other Land Management Plans, Policies and Controls - No conflicts exist because the goal of the Forest as well as other State and Federal agencies is to improve water quality.

To meet basic State of Idaho and Federal water quality laws, regulations, and standards, Alternatives A through J have similar amounts of watershed improvement. Several additional projects have been added to the Preferred Alternative K between the Draft and Final plans to recognize additional protection needed.

Chapter V

List of Preparers

The following is a list of individuals who prepared this environmental impact statement.

A. Forest Supervisor

Overall Direction of the Forest Planning Process:

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B. Core Team

Formulated Final Forest Plan:

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Bob Boston--Multiple Resource Staff Officer
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Bob Littlejohn--Forest Engineer
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Chris Carr--Timber Management Staff Officer
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Rick Patten--Forest Hydrologist
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Dan Davis--Wildlife Biologist
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C. Management Team

Made Decisions about Forest Plan from Recommendations of the Core Team:

Rod Smith--Administative Officer
Gary Meyer--Fire Staff Officer
Doug Glevanik--Planning Staff Officer
Chris Carr--Timber Management Staff Officer
Bob Littlejohn--Forest Engineer
Tom Blunn--Pierce District Ranger
Dick Hodge--Palouse District Ranger
Charley Mosier--North Fork District Ranger
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D. Support Team

Supplied Technical Support and Information to the Core Team:

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I. Task Force to Formulate Alternatives Based on Public Comments:

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J. Preparers Associated with Draft Documents:

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Chapter VI

Consultation with Others

VI. CONSULTATION WITH OTHERS

A. INTRODUCTION

This chapter discusses the Clearwater's efforts to involve and consult with various individuals and organizations/agencies during the formulation of the Forest Plan and Environmental Impact Statement.

The Clearwater National Forest has conducted an active public involvement program throughout the Forest planning process. Federal, state, and local government agencies and the Nez Perce Tribe have been informed and consulted. Also, individuals and special interest groups have had an opportunity to actively participate.

This chapter is divided into five sections. The next four sections are:

- Section B which describes the consultation with others between the draft and final Environmental Impact Statement, summarizes the number, type and general tone of the comments received, and summarizes the public involvement efforts undertaken during the planning effort;

- Section C which displays the letters of the other agencies, Indian Tribes, and elect officials and our responses to them;

- Section D which is a list of respondents; and

- Section E which is a list of agencies, organizations, and individuals who received this Environmental Impact Statements and/or its appendices.

B. CONSULTATION WITH OTHERS BETWEEN THE DRAFT AND FINAL EIS

1. Summary of Public Participation Activities

Prior to the release of the draft documents in May 1985, notification of the impending release of the documents was sent to private land owners whose lands border the Clearwater or who are dependent on the Clearwater for access. These land owners were specifically invited to comment on the draft documents during the public review.

The Draft Environmental Impact Statement and Proposed Forest Plan became available to the public on May 10, 1985 for a 120-day review and comment period which ended on September 15, 1985.

Over 600 original copies of the Proposed Forest Plan were sent to individuals, organizations and agencies; 500 copies of the DEIS; 500 copies of Appendices to the DEIS; and over 1,000 copies of the Overview. By the end of May, most of the original documents were gone.

Forest personnel spent an extensive amount of time meeting with various groups and agencies from the time the draft documents were released until April 1987.

Over 90 meetings were conducted; often personnel met with the same group more than once. For a complete list of meetings, see Appendix A of the EIS. Besides these meetings, contacts were also made by phone and by letters.

The Forest managers, specialists, and planners conducted open houses during June and July 1985 at Orofino, Kamiah, Lewiston, Spokane, Moscow, Boise, and Missoula. The meetings allowed more than 300 individuals to ask specific questions about the Proposed Plan.

By the end of the public review, 3244 letters/forms, 16 oral statements, and 30 reports had been received. (Approximately 35 comments were received after the September 15 deadline, and although they were coded and entered in the computer, they were not evaluated with the rest of the comments.)

Most of the responses were on "response forms" of which there were two main types. One was the "Crisis Rally Form," which was given to participants at a Crisis Rally sponsored by the North Idaho Chamber of Commerce in Orofino in August 1985. The Crisis Rally was held to draw attention to the plight of logging communities after Potlatch Corporation announced that it would close two of its lumber mills. The other response form came from the St. Maries area, and was sponsored by the St. Joe Valley Association. These two forms accounted for 2435 responses.

The Clearwater Forest received responses from the following locations:

Clearwater County	622
Idaho County	69
Latah County	98
Nezperce/Asotin Counties	500
Other North Idaho	1,265
South Idaho	198
Spokane Area	167
Other WA State	112
Montana	26
Oregon	13
All Other	91
No Return Address	129

The largest number of responses came from "Other North Idaho" category. All but a small percentage of those came from the St. Maries, Idaho area. Since a large response from that area was not anticipated, a separate code was not used for St. Maries, alone.

Each comment from the responses was coded and entered into a "content summary" program on the computer. This program recorded opinions and supporting reasons per topic.

The management team (consisting of staff officers, rangers, and the Forest Supervisor) evaluated the comments and identified issues, concerns, and opportunities (ICO's). Then they ranked each, individually, according to the seriousness and the difficulty of resolving the ICO. Next, the managers considered what type of effort would be needed to resolve the issue, such as, political, economical, technical, social, or legal. They also considered how the issue would be resolved, by whom, and when.

2. Summary of Public Comments Received

The content analysis which follows is a brief summary of public and other agency comments on the major Forest issues. These summary comments are derived from public review of the 1985 DEIS and Proposed Forest Plan. The purpose of the summary is to give the reader a "sense" of what the public said. For details, the reader should review the individual comments.

All written input was carefully read, considered and a Forest Service response was written for each comment. These comments and the Forest Service replies are filed in Appendix D of this EIS. Appendix D is an unbound appendix located at the Forest Supervisor's Office in Orofino. Any individual or group may request to view their written comment(s) and the Forest Service reply by contacting the Planning Staff at the Clearwater National Forest, 12730 Highway 12, Orofino, Idaho 83544 or phone (208) 476-4541 for an appointment. All such requests will be accommodated.

Individuals or groups not residing in or near Orofino, may request a copy of the *Forest Service's reply to their comment be sent to them. Since Appendix D* involves several thousand unbounded pages, copies of the entire Appendix are not readily available for public distribution.

All agency comments and the Clearwater's responses are found in this Chapter starting on page VI-10.

Public comments received between the Draft and Final Plan resulted in: 1) retaining three original issues verbatim, 2) deleting six original issues, 3) combining three original issues either together or with new issues, and 4) splitting one original issue into four separate issues. A new revised list of 15 issues as shown below is discussed in the Record of Decision and in Appendix A of this EIS.

1. Timber supply/community stability
2. Even-aged/uneven-aged timber management
3. Timber land suitability
4. Below-cost sales
5. Water quality/fish habitat
6. Elk winter range
7. Elk summer range/road management
8. Wilderness/roadless
9. Wild and scenic river potential
10. Visual resource management
11. Energy transmission corridors
12. Research natural areas
13. Historic trail corridors
14. Road construction
15. Riparian Area

The threatened closure of two Potlatch Corporation mills resulted in concerns with the proposed timber allowable sale quantity (ASQ) from the Clearwater Forest. The "crisis situation" resulted in an influx of comments (mostly petitions and form letters) from timber industry officials and employees as well as other citizens from the areas local communities. Many of these comments

appeared to be submitted without reading any of the Forest Planning documents, as evidenced by the content of the form letters and other input received.

Overall, the vast majority of comments strongly supported either end of the wide range of available Forest management options. Comments were either strongly prodevelopment (i.e., increase timber harvest levels) or anti-development(i.e., save roadless areas for future generations by recommending large amounts of wilderness and/or unroaded management). Some respondents favored road building so they could drive for their recreational needs, while others suggested closing all new roads to minimize harassment of elk to provide quality hunting. Others wanted to raise water quality and fish habitat standards, while others requested lowering or doing away with water quality standards by controlling quality through on-the-ground measures. The majority of comments advocated increasing timber harvests to provide jobs and community stability, but some suggested reducing timber harvest because it was not cost efficient for the Forest to build roads, and timber management would destroy amenities.

Few letters supported a wide spectrum of multiple uses. Very few letters supported the Proposed Action, Alternative E. Most letters either developed their own alternatives or supported those alternatives which best supported their special interests.

Timber Harvest/Supply, Community Stability, and Below-Cost Sales - - Timber harvesting in the Clearwater Forest has been an issue externally as well as internally for a number of years, even before Forest Planning started. The large amount of roadless land (950,311 acres) plus considerable steep unstable slopes, large wildfires in the early 1900's creating an imbalance of timber size classes, as well as a limited knowledge of the total timber resource, has contributed to this issue. The Forest Plan process under NFMA has intensified the issue, especially within the local timber industry, local communities dependent upon the wood product industry for employment, and those in environmental groups concerned with the effects of harvesting upon the Forest environment and roadless areas. With minor exceptions, practically every other issue on the Forest stems at least in part from this issue.

There are two widely divergent views on the issue as expressed by the letters and other comments received. Those requesting higher timber harvest levels are concerned about jobs and economics, and those requesting lower levels also expressed concern about jobs and economics, but not at the expense of damage to the environment or loss of other resources and uses.

The proponents of increasing the harvest level also expressed their need for areas to hunt and fish and "recreate." In fact, letters were received that said most of the recreationists and other users on the Forest were those involved directly or indirectly in the timber industry. If jobs were lost as a result of reduced timber supplies, then overall use in the Forest would decrease as well. Very few comments were received from these people who saw a conflict with having an increase timber harvest and still providing for all the other uses while protecting the environment.

Most proponents felt that the National Forest was the key to community stability, in fact, some even stated economics and social survival of families hinged on increased harvest levels from the Forest.

Some proponents recognized that the timber markets had been down for the last ten years or so, but believed that with restrictions on Canadian timber and other factors, the current level of harvesting would be exceeded in the near future.

Following the scheduled comment period, a series of meetings and correspondence with local industry and community leaders prompted the Forest Service to prepare a "Report on Idaho's Timber Supply." This report, as well as follow up information, both internal and external, prompted additional comments from local industry and community leaders. They cited studies that showed timber supplies available to supply local mill capacity would be short 52 MMBF/10 years from all sources in the area; therefore the Clearwater should increase its harvest level to make up for this deficit.

Opponents to increasing the harvest level were, as previously stated, not concerned with the actual harvest numbers as much as to whether the Forest could maintain the other resources. Many thought that we were already harvesting or planning on harvesting timber on poor sites of marginal ground areas too sensitive to log or road, at a loss of revenue to the government (below-cost sales). They also did not see the accelerated increase (at least in the short-term) in timber demand and an increase in price for timber. An often stated comment was that much of the timber was, and would continue to be, an uneconomical species, such as mountain hemlock and lodgepole pine. They said that we were subsidizing the timber industry and losing money for the government.

Even-Aged/Uneven-Aged Timber Management - - Most of the comments received on this issue were concerned that uneven-aged management was not adequately addressed, and that even-aged management, especially clearcutting, occurred too often.

Many people did not like the "ugly clearcuts" they were seeing in the Forest nor the fact that the Proposed Plan proposed even more. There was concern that the Forest was wasting too much timber and even destroying timber when the clearcuts were burned for elk habitat. Also comments were expressed that clearcuts had adverse effects on wildlife and resulted in reduced water quality.

There was considerable concern that the riparian zones in the Forest would only be harvested under even-aged methods. They were concerned that clearcutting did not meet the objectives of the riparian zone values, and that it would destroy or reduce wildlife, fish habitat, and water quality.

From a legal standpoint, i.e., NFMA, a number of respondents pointed out that the Forest did not justify clearcutting as the optimum method of harvesting, but just assumed that it is the only viable method for use. They stated that by doing this the Forest did not give full credit to uneven-aged harvesting.

Timber Land Suitability - - This issue surfaced between the Draft and Final Plan. A number of respondents felt that the Clearwater was not meeting the requirements of NFMA by not mapping all the unsuitable timberland. They thought that the Forest was probably designating lands for timber that would not produce timber or was unsafe from a soil/watershed standpoint. Some people stated that they did not believe the Forest could adequately reforest many poor timber areas after harvesting.

One reviewer stated that all lands identified on the landtype maps as streambreak lands should be placed in the unsuitable category because they were too sensitive to manage safely.

On the other hand, there were concerns that the Forest had identified (although not mapped) far too many acres as being unsuitable. They were concerned that productive lands were being taken out of the timber base.

Water Quality/Fish Habitat - - Water quality and the effects on fish habitat was one of the original issues identified prior to the DEIS. As with most other major issues, comments have been sharply divided between too high water quality standards and too low quality standards. Most comments from the woods products industry noted that the standards in the Plan were arbitrary and in fact exceeded Federal and State of Idaho standards. Many thought that rather than have standards the Clearwater could establish controls during the time of implementation. Other respondents thought that perhaps the Forest was addressing a problem before it had a problem, i.e., they suggested that the Clearwater conduct monitoring during project implementation and if it looks like there might be a problem with water quality then provide measures to control it.

Best management practices were mentioned as the best way to maintain good water quality. Others thought that the Forest was being overly sensitive to the Idaho Fish and Game Department and others in setting high unrealistic standards for fish habitat. Several respondents questioned whether our FISHED model, which determines effects on fish from sediment, had been tested.

At the other extreme the Environmental Protection Agency and others mentioned that even fish standards set at 80 percent of potential habitat were too low. They noted that this would result in depredation of streams and reduce the fish populations. There was special concern by some that no depredation should occur and that 100 percent of the potential, especially for anadromous fish, should be provided. Several key anadromous drainages, including Fish, Hungery, and White Sands Creeks, were mentioned as being sensitive to any type of development, especially road construction.

The resident fishery was mentioned in connection with "blue ribbon trout fishery habitat" in Kelly, Cayuse, Toboggan and Weitas Creeks, and the upper North Fork of the Clearwater River.

Considerable public media attention and political dialogue was directed at the Kelly, Cayuse, and Toboggan Creek drainages during Senator McClure's hearings held in Idaho in regard to his proposed wilderness bill in 1984. It has been reported that without exception, every person who testified at the hearings who spoke about the Kelly Creek/Toboggan/Cayuse area favored wilderness.

Elk Winter Range - - Concerning the draft documents, most comments about winter range questioned the Forest's ability to accomplish ten times more acres of burning on winter range each year than we had in the past. The respondents also questioned rather the Forest would have the budget to accomplish such a high standard.

Elk Summer Range/Road Management - - While many people acknowledged the importance of properly managing the winter range for elk, there appears to be more concern with summer range management, especially in connection with road closures. Again, as with winter range, very few, if any, comments were opposed to producing and managing elk summer habitat. The ways to accomplish it, however, were questioned.

The majority of the comments thought that more roads in key summer range should be closed. At the one end were those who advocated leaving range areas as unroaded to protect elk. The Bighorn-Weitas Roadless Area was mentioned frequently. Others favored development for timber but then closing the roads to public use, i.e., to hunting by anyone using motorized vehicles. Some respondents thought that the El Management Areas had too many open roads and favored closing some to enhance elk habitat.

At the other end were those who felt that roads caused no problems and cited the roaded portion of the Pierce District and in recent years the Palouse District as supporting large numbers of elk. These people wanted roads to remain open so the areas could be visited easily by vehicle.

Wilderness/Roadless - - Along with timber harvest these issues received more comments than all other comments combined. As with timber, this issue was sharply divided. There were those who wanted more roadless and/or wilderness and those who wanted no more or less roadless and/or wilderness.

Mallard-Larkins and Hoodoo (Kelly Creek) received the most comments, with most respondents favoring enlarged areas. The Toboggan Creek drainage was generally mentioned in connection with Kelly Creek. Mallard-Larkins, Hoodoo, and Elk Summit were generally favored for classified wilderness on the basis of Wilderness values, while areas such as Toboggan, Cayuse, Fish, and Hungery Creeks were favored for wilderness to protect fish and wildlife values.

Other areas mentioned for wilderness less frequently were Moose Mountain, Lochsa Face, and upper North Fork. Areas mentioned specifically in addition to some of the above, to protect roadless status for fish and wildlife and dispersed recreation values were Weitas, Pot Mountain, and Weir-Post Office.

Those favoring wilderness or roadless status were concerned with: 1) future generations, i.e., not having any wilderness left for their children; 2) destruction and degradation of water quality and fish habitat; 3) loss of key wildlife habitat and in connection with that, quality places to hunt; 4) loss of areas where people could hike and get away from the crowd; 5) loss of outfitter and guide livelihood; and 6) loss of visual beauty due to road construction and logging.

Those opposed to wilderness/roadless almost without exception were opposed to increases in either category. Very few people spoke against particular areas. Instead, most were concerned with the effects of wilderness/roadless on: 1) current and future timber outputs; 2) loss of jobs, 3) community stability and lifestyle; and 4) loss of taxes to the State and counties.

Others stated that: 1) only the rich could afford or had the time to visit wilderness; 2) wilderness denied handicapped people the right to visit the Forest and see the beauties of nature; 3) wilderness especially was promoted by Easterners and others outside Idaho and that Idahoans did not need or want more wilderness; 4) there was enough wilderness already especially in the Clearwater and this part of the State; and 5) by establishing wilderness or roadless, the timber resource was locked up and trees would die and fire hazards would be created.

Wild and Scenic River Potential - - Several respondents pointed out that the Forest did not comply with its own requirements to review and identify potential candidates for wild and scenic river status. Kelly Creek, North Fork of the Clearwater, and Little North Fork of the Clearwater were mentioned as candidates identified previously by the National Park Service.

Visual Resource Management - - The primary concern in this issue was with the impacts of Visual Quality Objectives (VQO's) on timber outputs, and the fact that the Forest did not display these impacts. It was also mentioned that the Forest did not display the VQO's on maps so that they would know where impacts would be.

Energy Transmission Corridor - - Bonneville Power Administration pointed out that by not identifying the potential energy transmission corridor that perhaps the Clearwater was in violation not only of our own regulations (NFMA), but the Federal Land Management Policy Act as well.

The concern was that the management direction described in the Proposed Forest Plan and identified on the Forest Plan map would preclude or at least seriously affect the construction of a transmission line should the need arise.

Research Natural Areas - - Although there were few comments regarding Research Natural Areas (RNA's), the concerns expressed date back to before Forest planning. The proposed Aquarius RNA presented in the Proposed Plan for 900 acres was criticized as being inadequate to protect the unique features of this disjunct species area. The original acreage of 3,900 acres as proposed by the Idaho Research Natural Area Committee was strongly supported by all respondents.

Other comments on Aquarius were concerned with the conflict with a proposed access road from Isabella Landing to the upper end of the Dworshak pool area along the north side of the Clearwater River.

The need for an additional RNA that would represent mid-elevation, high productive western red cedar/western white pine ecosystem was proposed by several respondents. An enlarged boundary was proposed for the Sneakfoot Meadows proposed RNA. The Walde Mountain area which is the only known area of Dasynotus Daubenmirei in the country was proposed for RNA status.

Historic Trail Corridors - - Most comments about the Lewis and Clark Trail, Lolo Trail, and Nee-Me-Poo Trail corridors were about the lack of protection proposed in the DEIS. On the other side, Bonneville Power administration thought that the proposed corridor management was too restrictive and that it could conflict with a potential energy transmission corridor.

Road Construction - - Reviewers of the Draft Plan felt that the Clearwater was planning to build too many miles of roads, that in many cases our standards were too high, i.e., they would be overbuilt and would be too costly. This last concern was stated in conjunction with statements about marginal economic and below-cost sales.

Other letters contained statements about the adverse effect road construction has on soil and water quality, visual quality, wildlife, and recreation. Concerns were expressed that too many roads were being planned on steep slopes and that the density of our roads was higher than needed.

At the opposite end, comments were received that more roads should be built throughout the Forest for access and recreation.

Riparian - - Respondents stated that it appeared that the Clearwater was managing riparian areas for intensive timber production. Other respondents expressed concerns that the Clearwater wasn't planning enough timber harvest from these areas.

C. COMMENTS FROM OTHER AGENCIES, ELECTED OFFICIALS, AND INDIAN TRIBES AND THE CLEARWATER REPLIES TO THOSE COMMENTS

28-1-8-1-7

US Department
of Transportation
**Federal Aviation
Administration**

Northwest Mountain Region
Colorado Idaho Montana
Oregon Utah Washington
Wyoming

17900 Pacific Highway South
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Sea e Washington 98168

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Mr. James C. Bates
Forest Supervisor
Clearwater National Forest
12730 Highway 12
Orofino, Idaho 83544

Dear Mr. Bates

We have reviewed your draft Clearwater National Forest Plan and Environmental Impact Statement and do not foresee any impact on aviation or its activity.

Thank you for the opportunity to review your draft proposal.

Sincerely,

Joseph W. Harrell
Policy & Planning Officer

RESPONSE

Thank you for your interest in the management of the Clearwater National Forest. We appreciate your response.

32-1-11-1-7

Advisory Council On Historic Preservation

The Old Post Office Building
1100 Pennsylvania Avenue NW #809
Washington, DC 20004

730 Simms Street Room 450
Golden, Colorado 80401

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May 28, 1985

Mr. James C. Bates
Forest Supervisor
Clearwater National Forest
12730 Highway 12
Orofino, ID 83544

REF: Draft Environmental Impact Statement for Clearwater National Forest

Dear Mr. Bates:

We have received and reviewed the above-referenced document and are gratified to find that the potential effects of actions anticipated by the document relative to cultural resources are given thoughtful attention.

However, we strongly recommend the adoption of comprenensive cultural resource management policies that would avoid a "fire alarm" approach to the treatment of historic properties in the face of actions that may threaten them. Such a policy can be developed and set forth in a forest-wide cultural resource management plan that will coordinate the identification, evaluation, and treatment of historic properties with other resource management and development actions undertaken in the future.

Such a comprehensive cultural resource management plan should be written in consultation with the Alaska State Historic Preservation Office. The Council is prepared to assist in this effort. If you have any questions at this time, or if we may provide assistance now or in the future, please contact Dean Shinn at 776-2682, an FTS number.

Sincerely,

Robert Fink
Chief, Western Division
of Project Review

RESPONSE

All alternatives in the Forest Plan contain provisions to inventory and manage archeological and historic resources in accordance with existing direction and regulations. The Forest has developed an overview of prehistoric and historic sites (Hudson 1976) which is updated yearly.

We believe that the body of Federal Cultural Resource legislation, USFS manual direction, the 1976 updated Cultural Resource Overview, and the A6 Management Area of the Forest Plan plus the Lolo Trail System Implementation Guidelines answer the Forest's needs and provide for a growing database from which to make good management decisions.

The Lolo Trail System Implementation Guidelines address the largest cultural resource complex on the Forest. In addition, the 1982 Draft Clearwater National Forest Cultural Resource Management Practices, Part I: Cultural Resource Inventories outlines the Forest's approach to undertaking cultural resource work.

39-1-9-1-3

University of Montana

Missoula, Montana 59812

June 7, 1985

Mr. Doug Glevanik
Planning Section
Clearwater National Forest
12730 Highway 12
Orofino, ID 83544

Dear Mr. Glevanik

Reference is made to the call for comments on the DEIS and proposed Forest Plan for the Clearwater National Forest.

My particular interest and my specific comments are directed at the Research Natural Areas proposed, referred to as Management Area M1. I have special interest and knowledge of this area. Several summers ago I was in the employment of the Regional Forester's Office (Planning) as a seasonal forest ecologist My assignment was in the research natural area program, contributing my effort to the design of the RNA system for R1 I had a chance to participate in a meeting with the Clearwater NF planning team and also to spend several days surveying (botanically/ ecologically) the proposed Aquarius RNA.

After examining much of the proposed area, in the company of several other professional plant ecologists (Drs. Bob Pfister and Steve Cooper), there was little doubt that what was being proposed was really the minimum area needed to preserve the unique floristic assemblage existing in the Aquarius The dam and high water had already led to a loss of area that might have been preserved under earlier times. Thus I was very disappointed that the 3900 acres werereduced to only 900 acres

Trimming a few acres here or there for boundary delimitation might be OK but dropping 3000 acres is really a move to destroy the refuge all together, and this simply shouldn't happen! I urge that the plan restore the area as proposed most recently. If I remember correctly even the 3900 acres is but half of what the Idaho RNA Committee had clearly justified! So any further reduction makes one wonder if the Forest Service intends to really commit itself to a ecologically sound RNA system

Please reconsider the Aquarius RNA I did the final Establishment Report for the Sneakfoot RNA and believe that has remained intact, I can't address comments on the other RNA's however Thank you for allowing me to respond

Sincerely yours,

James R Habeck
Professor of Botany

VI-13

RESPONSE

We have increased the size of the proposed Aquarius RNA to 3,900 acres.

COMMISSIONERS
Joe A. Leitch
Laurine Nightingale
Harold E. Cloninger

Lewis County

Lewis County Courthouse
Nezperce, Idaho 83543

June 10, 1985

40-3-5-1-5

Mr. James Bates, Supervisor
Clearwater National Forest
12730 Highway 12
Orofino, Idaho 83544

Dear Mr. Bates

Lewis County has little federal land, yet the economy of our largest community, Kamiah, is very much dependent upon the timber industry and thus upon the Clearwater National Forest That is why we wish to comment on the Clearwater National Forest Draft Plan. 1

The final plan should reflect the importance of maximizing timber production while maintaining environmental quality. In reviewing alternatives you outlined, it appears you can confortably produce 200 million board feet of sawlogs annually while meeting all prescribed environmental standards Your final plan, then, should reflect a level of timber harvest near 200 million board feet. 2

The harvest of timber, with proper management, will not detract from other values found in the national forests, including motorized recreation, hunting, fishing and maintenance of water quality. While 3
our local economy is in distress, it's most important that the national forest help provide community stability. A steady and high- 4
quality supply of raw materials will strengthen our existing forest products industry and help attract new business as well.

We appreciate the opportunity to comment and hope that you will carefully weigh our suggestions as you prepare your final plan. If you have any further questions or comments, please do not hesitate to contact us.

Thank you for your courtesy and consideration.

Very truly yours,

BOARD OF LEWIS COUNTY COMMISSIONERS

Joe A. Leitch

Joe A. Leitch, Chairman

Laurine Nightingale

Laurine Nightingale

Harold E. Cloninger

Harold E. Cloninger

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JL/kmn
cc: Todd Maddock

RESPONSE

1) We recognize the local communities' dependency on the Forest for a continued supply of timber. We have increased the total volume of timber per year for the first decade as described in the Draft EIS and Forest Plan. We believe this is a reasonable balance with the other resources and uses of the Forest.

We also have extensive areas of immature trees that will become available for harvest in the next 20-40 years. This availablility is reflected in the future decades harvest levels.

2) The Forest's total volume of timber is based on meeting all resource management objectives as outlined in the Forest Plan, not just timber production objectives.

3) The Plan reflects your concerns for multiple use management and is implemented on that premise.

4) Community stability was an important criterion as we developed the Plan. We believe that with our current backlog of timber purchased by industry (over 500 million board feet) and our ability to offer varying levels of timber sales annually that we can meet the demand for timber by local industry.

42-1-9-1-3

United States Department of Agriculture | Forest Service | R-1

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DEPARTMENT OF
FOREST SERVICE
COEUR D'ALENE, IDAHO

REPLY TO: 1920 Land and Resource Management Planning Date: JUN 13 1985

SUBJECT. Noxious Weeds

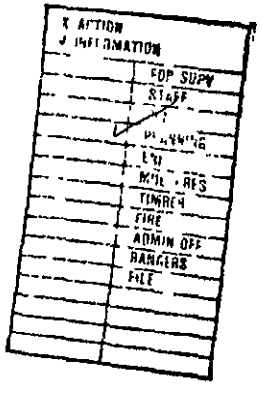
TO. Forest Supervisors

Enclosed is a comment by an individual concerned with the spread of noxious weeds into previously roadless areas via projected roads. Please consider this comment as you prepare Final Plans.

for TOM COSTON
Regional Forester

Enclosure

cc: R&W - Hardman
RF
PP&B - McMenus



42

RESPONSE
Response starts on second page

University of Montana
Missoula Montana 59812

Department of Botany (406) 243-5222

28 May 1985

Mr. Tom Coston
Regional Forest
Northern Region
U.S. Forest Service
340 N. Pattee
Missoula, MT 59801

Dear Mr. Coston·

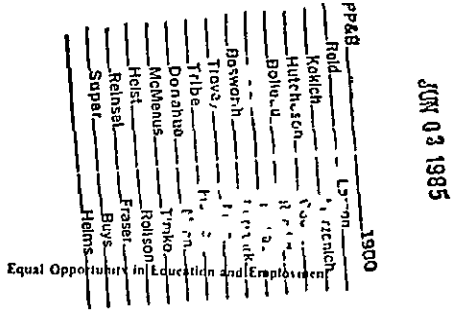
Please consider this a comment on the forest management plans which are presently being worked out for Region I I would like to know how the Region plans to deal with the invasion by noxious weeds of projected roads in previously roadless areas

Sincerely,

M. Chessin, Ph.D.

Meyer Chessin
Professor of Botany

MC/hc



JUN 03 1985

RESPONSE TO UNIVERSITY OF MONTANA (Continued)

Since the release of the Proposed Forest Plan we have developed and written direction for dealing with noxious weeds in the Clearwater. We have followed the policies and direction from the final Northwest Area Noxious Weed Control Program Environmental Impact Statement (December 1985). The noxious weed situation report is included in the Forest Plan.

45-3-1-1-5

BOARD OF COUNTY COMMISSIONERS

CLEARWATER COUNTY

P O BOX 586 OROFINO, IDAHO 83544 (208) 476 3615

June 10, 1985

Mr. James Bates, Supervisor
Clearwater National Forest
12730 Highway 12
Orofino, Idaho 83544

Dear Mr. Bates.

As you are aware, the Clearwater National Forest makes up more than half of Clearwater County. As a result, the final Clearwater National Forest Plan will have a major impact upon the future economy of the county. For this reason, we would like to offer our comments on your proposed plan.

Your plan does not adequately reflect the productivity of the Clearwater National Forest to grow timber. The alternatives displayed in the plan "over view" indicate that timber harvest as high as 200 million board feet can be achieved while meeting all environmental laws and regulations. We would encourage you to re-evaluate your preferred alternative in order to more nearly reflect the actual productivity of the forest. **1**

The harvest of timber, with proper management, need not detract from other values found in the national forest. In some cases, timber harvesting can benefit other uses such as big game habitat and motorized recreation. **2**

We urge you to give high priority to community stability as you select a final management alternative. The establishment of the national forests has resulted in a commitment by the U. S. Forest Service to local communities for providing a consistent supply of quality raw materials to support a growing local economy. We believe that the people of Clearwater County can best be served by fully utilizing the productive capacity of the Clearwater National Forest. Common sense management of the forest will result in a balance of economic and environmental quality for our citizens. **3**

Thank you for the opportunity to comment on the plan. We hope you will give our suggestions careful consideration.

Sincerely,

Board of County Commissioners
Clearwater County, Idaho

Donald Ponozzo, Chairman

V. James Wilson, Commissioner

X. E. Durant, Commissioner

VI-17

RESPONSE

1) It is possible to harvest 200 MMBF/year in the first decade from a productivity standpoint (See Alternatives B and C in FEIS), in fact the Maximum PNV Benchmark run indicates a potential harvest close to 300 MMBF. This does not take into account, however, the management of other resources as mandated by the National Forest Management Act nor the public concerns over management of these resources. Water quality, fish habitat, protection of riparian values, elk habitat and recreational opportunities are some of these major resources that are also an important part of management of the Clearwater Forest.

2) We agree, resource managment is complex, and often management of one resource will benefit another resource.

3) We recognize the dependency of the local timber industry for a continuing supply of timber. We have increased the total volume of timber per year for the first decade as described in the Draft EIS and Forest Plan. We believe this is a reasonable balance with the other resources and uses of the Forest. Several laws including the National Forest Management Act require the Forest to maintain a sustained yield of Forest products. However the law also requires that other resources be managed and protected at the same time. No law specifically requires the Forest to provide the specific amount of timber necessary to maintain community stability.

We also have many areas of young trees that will become available for harvest in the next 20-40 years. This availability is reflected in the future decades harvest levels.

U.S. Department of Transportation
United States Coast Guard

Commandant
United States Coast Guard

Washington DC 20593
Staff Symbol G-WP-3
Phone (202) 426-3300

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53-1-11-1-7

Mr. James C. Bates
Forest Supervisor
Clearwater National Forests
12730 Highway 12
Orofino, Idaho 83544

Dear Mr. Bates:

We have reviewed the Proposed Forest Plan and Draft Environmental Impact Statement for the Clearwater National Forests, Orofino, Idaho. We have no comments to offer at this time.

We appreciate the opportunity to assist your efforts in the development of this documentation. We look forward to continued mutual cooperation and coordination of these projects.

Sincerely,

W M McGovern
W. M. McGOVERN
Chief, Environmental Compliance and Review Branch
Planning and Evaluation Staff
By direction of the Commandant

RESPONSE

Thank you for your interest in the management of the Clearwater National Forest.

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JOHN V EVANS
GOVERNOR
IDAHO TRANSPORTATION BOARD
CARL C MOORE—CHAIRMAN
LLOYD F BARRON—VICE CHAIRMAN
JOHN M OHMAN—MEMBER
E DEAN TISDALE
DIRECTOR

TRANSPORTATION DEPARTMENT

PO BOX 7129 BOISE IDAHO 83707

July 16, 1985

James C. Bates
Forest Supervisor
Clearwater National Forest
12730 Highway 12
Orofino, ID 83544

Please consider this letter as the Idaho Transportation Department's official response and input to the recently published Forest Plan issued by your office.

The Department's primary interest in the Forest Plan is the preservation and improvement of U.S. 12 through the Clearwater River Corridor. As you well know, the operation of this primary highway has been the subject of much controversy over the past years. The highway is a major east-west line to North Central Idaho and, as such, has a major influence on the economy and well being of many of Idaho's citizens in this area. Not only does the highway contribute to the economic base of Idaho, it also serves as a major access to a large recreational area within our state. 1

There is little doubt that as time passes there will be increased demands placed on the highway. As traffic increases, the already recognized conflict between commercial and recreational vehicles will increase.

It is not inconceivable to expect commercial traffic to increase to a point that twenty years from new there may be twice the volume that presently exists. Needless to say, the same increase could be expected from other users on the route. The same conflicts that exist on the route today will be magnified unless some long-range planning is recognized and accomplished in the years to come.

The Department's recently completed environmental assessment only recognized immediate safety improvements to accommodate today's traffic. The identified improvements are scheduled for the next ten years and are really more of a maintenance and housekeeping effort which would not satisfy traffic needs over the years to come.

In August of 1974 the Forest Service published a report entitled "*Transportation Planning Report - Lewis and Clark Highway - U.S. 12.*" There were a number of recommendations made in the report

CONTINUED

SAFE TRANSPORTATION MEANS PROGRESS
EQUAL OPPORTUNITY EMPLOYER

RESPONSE

1) Highway 12 is recognized as an important transportation route accessing resources of the Forest and providing east-west access across Idaho for commerce and domestic travel.

regarding safety improvements such as additional guardrail, possible alignment improvement, passing lanes and materials source requirements. In view of the increased traffic on the highway, most of the proposals outlined in the report are still valid today. In the Department's review of the proposed Forest Plan, there is very little mention of the highway and what impact it has on the future Forest Plan.

The Department suggests the following areas of transportation concerns be addressed in the plan:

1. Recognize the continued need for highway maintenance aggregate over the entire 100-mile route. Future aggregate sources or areas of permissible sources should be designated in the plan. Those designated areas should be located within a reasonable haul distance to storage facilities at Powell, Bald Mountain, Fleming and Kooskia. **2**

2. Modify the statement on page III-24 with regard to "no encroachment in the rivers." Three substandard highway alignments at mileposts 107.4, 110.0 and 118.5 have collectively accounted for 45 accidents, 34 injuries and three fatalities in recent years. To reasonably correct these alignment problems, some encroachments into the river would be required.

   A very large portion of the existing highway was constructed with the embankment encroaching into the river. The impact on the river in correcting these deficient areas would be minimal considering the amount of existing encroachments. If allowed to remain in future years, we can expect a continued increase in accidents at these locations. Future accident occurrences could also indicate other areas where this action might be justified. **3**

3. Recognize the need for eventual embankment replacement. Many areas show considerable erosion taking place which, at some time in the future, will have to be replaced to retain the existing roadbed. When this occurs, reconstruction to the original condition will most surely involve replacement of embankments presently in the river. A 50-year flood occurrence as was experienced on the Salmon River in the early 1970's could most certainly result in whole new construction in some areas.

   In some areas, the embankments were constructed of highly erodible material and not properly faced with riprap. Each high water year will accelerate the loss of material. Therefore, future work in the high water area of the river will be required to preserve the roadway embankments. **4**

CONTINUED

RESPONSE TO IDAHO TRANSPORTATION DEPARTMENT (Continued)

2. A standard in the Forest Plan addresses the need for aggregate sources in the river corridor. We will identify these sources on a project level. We recognize that sources within the Wild and Scenic River zone will be necessary for efficient maintenance of the highway.

3. We lack authority to permit further encroachment in the Lochsa River because of the Wild & Scenic River Classification. Section 15(b) of the Wild and Scenic River Act is specific in this respect. We recognize that it may be desirable from a highway management/public safety standpoint to make certain improvements in highway alignment which require alteration of the "free flowing" character of the river, but Congress will have to grant authority to permit such alterations. The fact that other alterations of the river existed prior to river classification has no bearing on our authority to permit additional alteration. Section 15(b) of the Act is specific in this regard also.

4. The areas of reconstruction, repairing and placing riprap are similar in nature to items 2 above, though the Forest Service may assume a more judgmental role in determining what constitutes further alteration. In most instances replacement, repair and placement of riprap to protect the existing road embankment could be permitted without violating the intent of the Wild and Scenic Rivers Act. The degree of work required in the high water area would be a key factor in the determination. Because of the complexity of such decisions we encourage the Department to submit such proposals well in advance of the desired project implementation date.

5. We recognize the need for management of vegetation within the roadway prism. Direction in the Forest Plan addresses this subject without specifically citing what methods should be used. We will continue to work with the Department to plan vegetative management for highway safety.

4. Roadside vegetation and timber encroachment within the roadway prism is becoming an ever-increasing problem. Since the highway was opened in 1962, trees have matured to the point that in many areas they are immediately adjacent to the highway shoulder. Selective thinning and removal should be made to open up a roadside safety clear zone through the highway prism. The removal of this vegetation and timber would provide better sight distance on the highway, enhance the traveler's view of the river and provide a clear zone which, in all likelihood, would reduce the vehicle and game conflicts. 5

The following statement is made on page II-21 of the Forest Plan:

"Cooperate with the Idaho Department of Transportation, Division of Highways, to provide safe vehicle traffic over Highway 12 while protecting the inherent values of the corridor."

In the past, our agencies have always enjoyed a good working relationship with each other. We fully expect this to continue in the future. However, the Department feels this statement is somewhat misleading. In order to provide safe vehicle traffic over U.S. 12, there are going to have to be some trade-offs. In the statewide functional classification system, U.S. is classified as a principal arterial. Under this designation a roadway width for two-lane initial construction calls for a 34-foot width with a subgrade width to accommodate a future 40-foot width. It would be extremely difficult to obtain these widths on U.S. 12 without major reconstruction.

VI-21

As traffic increases and further demands are placed on the highway, particularly from a safety standpoint, some of the "inherent values of the corridor" may be impacted with reconstruction. It should be recognized the highway is in an ever-changing situation. If in the future, as public need increases for an upgraded facility, our Department will have to be responsive to that need.

The Department appreciates the opportunity for comment on the Forest Plan.

Sincerely,

E. Dean Tisdale

E. DEAN TISDALE
Director

EDT:JHC:kg

United States Department of Agriculture

Soil Conservation Service

Room 345, 304 North 8th Street
Boise, Idaho 83702

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NO. IDAHO

July 22, 1985

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Mr. James C. Bates
Forest Supervisor
Clearwater National Forest
12730 Highway 12
Orofino, Idaho 83544

Dear Mr. Bates:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement, Clearwater National Forest. Our comments are as follows:

We believe the development of alternatives has addressed the fifteen issues, concerns and opportunities expressed through the public involvement procedure. The use of benchmark levels, developed under minimum management requirement constraints have permitted the DEIS to display an adequate range of alternatives. We question the use of benchmark PS2 (maximize present net value) with its constraint of minimum timber rotation ages set at 95 percent of culmination of mean annual increment for alternative comparison. It appears the use of economic rotations would be more appropriate, especially in view of the concerns for roadless area, wilderness, and wildlife and fisheries habitat management. The use of economic rotations might have reduced the amount (acres) of suitable timber producing land necessary to satisfy the long term sustained yield (LTSY) goals which seem to be tied to the 478 MMBF mill capacity in the local area. **1**

We are concerned that the present depressed condition of the lumber market and the fact that sold, but uncut, timber are continuing problems. Would you now consider a re-examination of projected requirements for timber production? A non-declining timber yield plan without a stable lumber market will not help the employment opportunities in the local area, nor will it make the forecast annual cut in each alternative a realistic figure. Lumber market fluctuations are a historic fact, and the increased intrusion of foreign lumber is a recent event which may cause market fluctuations to change. The use of economic rotations that recognize, to the extent possible, the impact of market changes should be included in the DEIS and the Forest Plan. **2**

The maps that accompanied the DEIS showing management area delineations for each alternative are excellent. They make the review procedure much easier in view of the large amount of written materials.

The Forest Plan lists research needs, but does not mention the brackenfern problem. We believe that the extent of the acreage now in brackenfern **3**

The Soil Conservation Service is an agency of the Department of Agriculture

RESPONSE

1) According to the benchmark analysis, relaxing the 95 percent Culmination of Mean Annual Increment (CMAI) requirement does not have a major effect on results. The opportunity cost of delaying harvest until 95 percent of CMAI is reached is analyzed in benchmark run #4a (PN3) and benchmark run #5 (PP1). There was a 1.7 percent reduction in PNV as a result of applying the 95 percent CMAI requirement. Since the cost of including the 95 percent CMAI requirement was small and did not impact the results, benchmark run (PS2) used in alternative comparison included 95 percent CMAI requirement to satisfy National Forest Managment Act requirements and Forest Service Manual direction.

2) Full implementation of the Forest Plan is dependent on a healthy timber economy and, to a degree, past fluctuations in the timber market have been considered in the projection of allowable cuts in the future.

3) We are coordinating with the Intermountain Forest and Range Experiment Station to continue research on regeneration problems.

glades without tree regeneration should indicate the need to continue this research. 3

Neither the DEIS nor the Forest Plan address the use of Consolidated Resource Management Planning. We believe this type of planning can be useful in managing forestland with grazing allotments and could be a part of Sections II, III, and IV in the Forest Plan. 4

Sincerely,

Stanley N. Hobson
State Conservationist

cc.
Gary Post, AC, Moscow AO

RESPONSE TO U.S.D.A. - SOIL CONSERVATION SERVICE (CONTINUED)

4) We are not familiar with the phrase "consolidated resource management planning." We are mandated under Forest Service regulations such as the Multiple Use-Sustained Yield Act, the National Forest Management Act, and the National Environmental Policy Act to conduct planning and analysis in a balanced and objective manner. We believe we have done this and have considered all resources equally in terms of their potential and also predicted use and demand.

Grazing on the Clearwater is an important resource but in terms of use, minor, because of the lack of demand.

JACK S. WAYLAND
Director

687-1-8-1-6

STATE OF WASHINGTON
DEPARTMENT OF GAME
600 North Capitol Way GJ 11 • Olympia, Washington 98504-0091 • (206) 753-5700

RECEIVED
AUG 29 '85
USFS
MOSCOW, IDAHO

X-ACTION / INFORMATION	
	FOR SUPV.
	STAFF
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August 26, 1985

Mr. James C. Bates
Forest Supervisor
Clearwater National Forest
12730 Highway 12
Orofino, Idaho 83544

Dear Mr. Bates:

Although I am presently a resident of Washington, I was raised during the period of 1920 to 1932 in Elk River Idaho and have fond memories of the huge stand of white pine timber which at that time covered Clearwater County.

As a member of the Washington State Game Commission and having spent most of my life fighting for wildlife, I believe I understand its value economically and esthetically to the Northwest. In your forest planning process, I urge you to support the following:

1. Initiate safeguards to insure no further degredation of streams in the Panhandle Forest.
2. Support Idaho Game Department's plan to increase elk populations.] 1
3. Protect from road ingress 13 primary areas identified by Idaho Game Department as having high value for quality elk hunting.] 2
4. I also strongly support wilderness designation for Mallard-Larkins area, Long Canyon, Selkirk Crest, Grandmother Mountain, Sctochman Peaks, and Salmon Priest.] 3
5. I encourage adoption of alternative 9 of the Forest Service Plan.

VI-24

RESPONSE

1) The selected alternate in the Forest Plan supports the Idaho Fish and Game Department Plan and its goal to increase the elk population in the Clearwater National Forest.

2) Although we did not designate as roadless all the areas recommended by the Idaho Fish and Game, we did add a new prescription, C8S, which we applied to all the remaining areas. The C8S prescription provides for timber management with roads, but immediately following harvest activities all roads will be closed to all motorized vehicles. This prescription is agreeable with the Idaho Fish and Game and should help protect important elk summer range.

3) We have proposed 66,700 acres of the Mallard-Larkins Roadless Area for wilderness designation. This figure does not include contiguous acreage on the Idaho Panhandle portion which is also being recommended for wilderness in their Forest Plan.

Further, I believe that timber harvest should be based on the U.S. Forest Service recommended allowable cuts, not on the accellerated cuts supported by the present administration. 4

Sincerely,

Norman Richardson, Member
Washington Game Commission

cc: Governor John Evans
Senator Dan Evans
Senator Slade Gorton
Representative Sid Morrison
Representative Tom Foley
Congressional Delegation

RESPONSE TO WASHINGTON DEPARTMENT OF GAME (Continued)

4) The allowable sale quantity is based upon the Forest Plan. As required by NFMA, the Plan is a balance of all resource outputs. One resource is not favored over another.

739-1-6-8-6

STATE OF IDAHO

DEPARTMENT OF HEALTH AND WELFARE

RECEIVED
R-1 REGIONAL OFFICE
U S F S
MISSOULA, MONTANA

DIVISION OF ENVIRONMENT
Statehouse
Boise Idaho 83720

August 30, 1985

X = ACTION / = INFORMATION	
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James C Bates, Forest Supervisor
Clearwater National Forest
12730 Highway 12
Orofino, Idaho 83544

Dear Mr Bates

Our comments on the Draft Clearwater National Forest Plan and Draft Environmental Impact Statement are shown below In reviewing the plan we concentrated on the following elements

1 Fisheries The Department's interpretation of the Idaho Water Quality and Wastewater Treatment Requirements, 1985 (Water Quality Standards) regarding fisheries as a beneficial use of water requiring protection

2 Monitoring the effects of management activities on the Clearwater National Forest as related to compliance with Water Quality Standards

3 Potential cumulative impacts of management activities on water quality and fisheries

4 Mining activities as it relates to water quality

5 Watershed protection in regard to domestic water supply

Since the forest plan sets management direction for the next fifty years, we have focused our attention on standards, objectives, and procedures relating to the elements of the plan listed above These comments do not

VT-26

RESPONSE

Response starts on second page

express an opinion on the range of alternatives, since State rules and regulations must be met regardless of the alternative selected

FISHERIES - FOREST STANDARDS

We agree with the general statements listed in the forest goals and objectives section regarding fisheries and water quality

Forest Standards

Forest Standards for water and fisheries are listed in Section II and Appendix J In general, we believe the method used in developing the standards is an excellent approach at resolving conflicts between multiple uses on the forest We have the following comments on the specifics listed in the standards

Basic - It is difficult to interpret the meaning of this standard It appears that it falls into a separate category from the other standards which relate to fisheries habitat, and would allow greater impacts than even the minimum viable standard It is our understanding that this standard would apply primarily to small headwater drainages where no fisheries are present, and therefore efforts to prevent or mitigate the introduction of sediment would be minimal This is somewhat alarming, in that the plan shows that the 'basic' standard is the general standard for the forest (Page II-27, number 4)

Obviously, the controlling standard in a watershed is the most protective standard identified at some downstream point in the watershed Protection of the small headwater streams, which comprise the highest percent of the land base in a watershed, will be critical to meeting the downstream fisheries standard The language in the plan should be revised to address these concerns, especially with respect to where the 'basic' standard applies and what it means on the ground relative to control of sedimentation

No effect and high fishable - We agree with the intent and use of these Forest standards

RESPONSE TO IDAHO DEPARTMENT OF HEALTH AND WELFARE (Continued)

1) The water resources standard and criteria must be applied and considered throughout a watershed system to achieve the desired effect in any part, especially in a downstream reach that is controlled by its upstream watershed. The 'basic' standard, as stated in the Plan, applies to all waters on the Forest. It can be supplemented where necessary in the event that specific water resource values are specified and need to be addressed (such as the specific criteria where fish habitat is a concern). The basic standard is the necessary direction to protect and design for all water resources values, even if they are not in the same reach.

Moderate fishable - Threshold levels under this standard are shown for steelhead and chinook salmon Restoration of anadromous fish runs is an important goal for the State of Idaho as recognized in the Forest Plan Given the status of these species in Idaho, planned degradation of their habitat at the level indicated in this standard would not meet the intent of the policy in the State Water Quality Standards to protect existing beneficial uses (Section 1 - 2050 06) Reference to anadromous fisheries should be deleted in formulating the final plan

2

Low fishable - Threshold levels for steelhead should be removed from the standard in the Final Plan for the same reasons shown for the moderate fishable standard

Westslope cutthroat trout is a species of special concern for the State of Idaho as identified by Idaho Fish and Game Given this status, the level of habitat degradation (47%) listed for cutthroat trout is not consistent with protection of benefical uses This standard should be deleted in formulating the final forest plan (See discussion below)

3

Minimum viable - This standard does not provide protection for beneficial uses as required by the State Water Quality Standards This standard should be deleted from the final plan (See discussion below)

On page II-7 and in Appendix J(3) we note that the 'low fishable' and 'minimum viable' standard is applied to stream drainages which have been heavily developed in the past or are heavily impacted by other sources of pollution The assumption is that these stream reaches are already at reduced habitat potentials (47 percent and 66 percent) described in these standards A different method should be used to address this category of streams rather than assigning them to a lower standard We suggest that a separate procedure be recognized for streams that are already below biological potential due to past activities The procedure would address application of rehabilitation measures to these stream systems as warranted by their value to the fishery if restored It is recognized that rehabilitation efforts would have to be balanced with cost effectiveness and effects on other multiple uses However, it would be the intent of the

4

RESPONSE TO IDAHO DEPARTMENT OF HEALTH AND WELFARE (Continued)

2) This is a matter of opinion. This standard was designed to meet at least the letter and the intent of the State and Federal law.

3) This criteria level was used to help generate tradeoff analysis. It was not considered as a valid alternative.

4) This is addressed in the Forestwide Water Quality standards 8, 9, and 10 to the extent that Standards define criteria for Forest management activities. The Plan directs management to develop rehabilitation programs with the objective (which is not a standard) of improving degraded stream systems for any important water resource value - not just fisheries.

procedure to maintain a recovery trend in these drainages Assigning degraded streams to a low standard as shown in the draft plan appears to encourage continued downward trends

As the draft plan now reads, there is no indication that the 'low fishable' and minimum viable standards are not or would not be applied to existing high quality waters In this case, forest activities would be allowed to drastically reduce a stream's biological potential- by as much as 66 percent This definitely does not meet the intent of the State Water Quality Standards, nor the goals and objectives of the draft forest plan This misunderstanding could be rectified by eliminating the 'low fishable' and 'minimum viable' standards in drafting the final plan

5

The State Water Quality Standards define serious injury as " Sustained damage to a designated or protected beneficial use which is not socially or economically justified" For the public to understand the tradeoffs between sustained damage and social and economic factors, a full disclosure of information used in developing alternatives is necessary in the forest plan

The information on water and fisheries listed in the draft plan is incomplete to allow full public participation Streams are placed in categories on page II-27, but there is no indication that this classification is based on the effect of past activities or is due to planned activities as part of this plan The information that is lacking is partially described in the rough draft of Appendix J(3) which was available from your office In addition to the information listed in Appendix J(3), an indication of the existing habitat quality should be displayed, as well as the quality and completeness of this data

We do not have sufficient information to comment on the water quality objectives assigned to specific drainages [Appendix J(3)] at this time However, in general we agree with the procedure of assigning streams with anadromous species a standard no lower than 'high fishable'

RESPONSE TO IDAHO DEPARTMENT OF HEALTH AND WELFARE (Continued)

5) First, there is no water quality criteria in the Plan that allows for a permanent or long term reduction in water quality. All criteria require recovery periods and limited impact periods. Secondly, the criteria were designed to meet or exceed all state and federal Standards. If there is some 'intent' that is not expressed in the law, the public needs to be made aware of it.

MONITORING

Sediment/fisheries models are useful for qualitative comparison of alternatives, however, they cannot be relied on to implement the forest plan Implementation of the forest plan must be based on quality data Table IV-1 serves as a useful guide regarding which topics should be included in a monitoring plan, but cannot be considered an adequate monitoring plan

A comprehensive monitoring plan for fisheries and water quality needs to be developed as an integral part of the final plan The monitoring system should provide data with sufficient precision and accuracy to allow the manager and the public to know if the forest standards as well as the State Water Quality Standards are being met Existing monitoring programs and funding levels are inadequate to meet this need Timber harvest activities should not be implemented under this plan until an adequate monitoring system is in place

6

Past monitoring by national forests in regard to watershed management has been ineffective This is documented in a U S Forest Service report for the Northern Region, Summary Report-Watershed Policy and Program Review, January 1984 In summary, this report shows that monitoring to date in the Northern Region has not provided the data needed to implement the objectives of the forest plan Recommendations in this report should be followed in developing a detailed monitoring plan

Monitoring activities in national forests have been hampered by inadequate funding Although dollar amounts are shown in Table IV-1, it is not possible to determine if this is adequate without examining a detailed monitoring plan Monitoring needs to be considered an integral part of the management program and funded accordingly

Fisheries and sediment models are used to predict sediment impacts on fisheries in the Forest At present, these models have shortcomings which can only be corrected through increased efforts at calibration and verification Some of these problems include poor data for rating the

RESPONSE TO IDAHO DEPARTMENT OF HEALTH AND WELFARE (Continued)

6) A comprehensive monitoring plan for water quality and fisheries is included in the Final Plan. We agree that the original plan was inadequate.

effectiveness of mitigative measures, lack of a mass failure component, documentation for the channel routing component, and documentation for recovery periods An objective regarding monitoring to verify the outputs of the model should be included in Table IV-1

The footnote regarding precision on page IV-8 confuses the definitions of precision and accuracy Precision and accuracy are separate descriptors of data quality For most parameters which are used to measure water quality impacts it is possible to estimate precision, but it may be very difficult or impossible to estimate accuracy Methods for determining precision and accuracy for water quality/fisheries data should be addressed in a detailed monitoring plan

CUMULATIVE EFFECTS OF FOREST MANAGEMENT

Our understanding of the water quality/fisheries analysis performed for the forest plan is that this analysis is limited to addressing silvicultural activities in unit watersheds Cumulative effects analysis should also be done on larger watershed systems In addition, other impacts in the watershed need to be addressed, for example, the additive impacts from mining, grazing, and hydro-development

The Forest Plan Environmental Impact Statement does not provide an analysis which is specific enough to address these concerns Individual Environmental Analysis Reports which we have reviewed are too limited in scope (i e , addresses a portion of a watershed, or a single activity) to provide the needed level of resolution We suggest that more specific environmental analysis be completed for major watersheds through preparation of Environmental Impact Statements This may be the only way to adequately estimate cumulative effects on major stream systems 7

MINING

The draft plan and environmental impact statement recognize the potential for significant adverse impacts from mining It is stated that interest in mining is on an upswing in the forest Although the potential impacts of mining are recognized, no detailed analysis was included as part of the forest plan 8

RESPONSE TO IDAHO DEPARTMENT OF HEALTH AND WELFARE (Continued)

7) The most effective means to evaluate and to control cumulative water quality effects on major stream systems is to develop a comprehensive analysis of the major stream system Toward this end, this Plan provides for an "Area Analysis" of long-term management and effects to be done on relatively homogeneous units of the Forest, including major watersheds. The need to develop a separate EIS would be determined by the scope of the issues and controversy determined to exist for that area.

8) All proposed mining operations will meet or exceed water quality standards for the State of Idaho. The standards to minimize impacts on water quality are discussed in detail in the Forest Plan Standards and the Best Management Practices. The preparation of an environmental impact statement for possible mining impacts would be impractical at this time since the Forest Plan contains very specific management standards for water quality.

We feel that the impact of mining on water quality should be addressed in a separate environmental impact statement The forest plan EIS is primarily directed toward timber harvest impacts and does not adequately address the cumulative impacts from past and potential mining activity The analysis should include an inventory of abandoned and active mines on the Clearwater Forest and a mitigation plan for abandoned mines

DOMESTIC WATER SUPPLY

The Division of Environment monitors the safety of domestic water supply systems which utilize surface waters from the Clearwater National Forest The risk of impacting these supplies from forest management activities should be addresssed in the forest plan 9

Direction for public water supply management is provided in Section 2543 05 of the Forest Service Manual This manual section states that Forest Plans will include management goals and standards which comply with state water quality standards, and also states that management standards will include provisions for public supply watersheds to be coordinated with and reviewed by the water users and the appropriate state agency We concur with this manual direction

To coordinate with the present format of the draft forest plan, domestic water supply watersheds should be identified as a separate management area in Section III of the plan Appropriate management goals, standards, and schedules of management practices would then be identified similar to other management areas

One of the management goals that should be identified for domestic water supplies is development of municipal watershed management plans for identified communities of concern These plans are an excellent way to reach agreement between the water users and the land management agency on how the watershed should be protected We suggest the management plans be developed before further activity is allowed in affected watersheds

RESPONSE TO IDAHO DEPARTMENT OF HEALTH AND WELFARE (Continued)

9) Domestic water supplies were not identified as a principle issue in the development of the Forest Plan, and therefore the draft referred to them only under the comprehensive "Basic standard" for all watershed systems. There are very few domestic supply watersheds on the Forest, most supplies are derived from wells (not surface water), and almost all are classified as "non-community supplies." There is sufficient Federal and State law and policy to define water quality standards for domestic supplies. The potential for conflict between domestic water supplies and Forest practices and management is very site specific and small in scale. Therefore, a comprehensive analysis of risks and development of specific prescriptions would not be appropriate in this broad-based Plan. The development of prescriptions and analysis would be more effective and appropriate at a project level.

Nevertheless, general direction for the development of prescriptions and analyses within domestic supply watersheds have been included in the Final Forest Plan.

AIR QUALITY

The draft plan and EIS are incomplete with respect to addressing major air quality concerns The plan and EIS should address the following concerns

1 To reflect current Air Quality Bureau regulations (March 12, 1985), the plan should state that the Forest will coordinate with the Air Quality Bureau on the development of a Smoke Management Program for prescribed burning in Idaho and will abide by the plan when it is implemented

2 The protection of air quality values, including visibility, in nearby Class I areas

3 The attainment and maintenance of Federal and State ambient air quality standards

4 The impact of prescribed burning activities on air quality

We appreciate the opportunity to review the draft forest plan and draft EIS Our intention is to provide constructive comments which will assist in developing the final forest plan If you would like to discuss these comments or need further clarification, please contact Steve Bauer at 334-4250

Sincerely,

Lee W Stokes, Ph D
Administrator

LWS par

cc T. Coston, Regional Forester
L McKee, EPA
R. Burd, EPA
A. Murrey, IDHW

10

RESPONSE TO IDAHO DEPARTMENT OF HEALTH AND WELFARE (Continued)

10) The protection of air quality was addressed in the Draft EIS (see Chapter III page III-32 and Chapter IV under the slash control section on page IV-61.) Based on your concerns however we have added a short comparison of the potential impacts of prescribed burning of the different alternatives in Chapter II.

We have also included Forestwide management direction of the Forest Plan, which p rvides for coordination with the State of Idaho in developing a smoke management program.

Nez Perce County Weed Control

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OROFINO, IDAHO

805 26TH STREET NORTH
LEWISTON, IDAHO 83501

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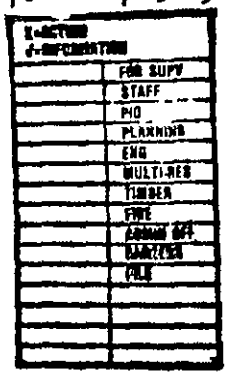

August 2, 1985

James Bates
Forest Supervisor
Clearwater National Forest
12730 Hwy 12
Orofino, Idaho 83544

RE Comments on Proposed Forest Plans Draft Environmental Impact Statements

Dear Mr Bates

Enclosed you will find joint comments of Nez Perce County Weed Control and Citizens for Environmental Quality (CEQ) which pertains to the above stated draft Forest Plans

Additional comments of CEQ which do not necessarily reflect the position of Nez Perce County are being sent under separate cover

If you have any further questions or wish for more information, Please do not hesitate to call me at (208) 799-3066

I am looking forward to receiving the final Forest Plans

Sincerely,

D J Gray

Dennis J Gray
Supervisor

dk

Enclosure

RESPONSE

Response starts below

INTERDISCIPLINARY TEAMS

Nez Perce, Clearwater & Idaho Panhandle National Forests

Region 1

COMMENTS ON PROPOSED FOREST PLANS DRAFT

ENVRIONMENTAL IMPACT STATEMENTS

August 1985

Prepared by:

Dennis J. Gray
Superintendent
Nez Perce County Noxious Weed Control

Georgia E. Hoglund
Authorized Representative
Citizens for Environmental Quality

TABLE OF CONTENTS

TO Interdisciplinary Teams
Nez Perce, Clearwater & Idaho Panhandle National Forests

FROM Georgia E. Hoglund, Citizens for Environmental Quality
Dennis J Gray, Nez Perce County Weed Control

RE COMMENTS PROPOSED FOREST PLANS
DRAFT ENVIRONMENTAL IMPACT STATEMENTS

DATE August 1, 1985

Thank you for the opportunity to comment on the above stated proposed forest plans

We respectfully request that the comments contained herein be treated as substantive within the meaning of the Council for Environmental Quality regulations implementing the National Environmental Policy Act (40 CFR 1503.4).

Our comments are as follows

(1) DRAFT ENVIRONMENTAL IMPACT STATEMENTS FAIL TO DEVELOP INTEGRATED PEST MANAGEMENT PROGRAMS

The draft forest plans fail to develop integrated pest management (IPM) programs as required by the National Forest Management Act (§ 219 13(b)(3)) and official USDA policy (Memorandum No 1929, "USDA Policy on Management of Pest Problems," December 12, 1977). Therefore, the final environmental impact statements need to develop cost effective IPM programs which can be easily implemented by Forest Service personnel

The above mentioned Secretary's Memorandum lays out the official USDA policy on managing pest vegetation problems such as the unwanted brush which competes with conifers in the three north Idaho national forests. The Memorandum states on page one:

> Effective integrated pest management has to be an integral part of the overall management of a farm, a business, or a forest A thorough understanding of these complex operations can be accomplished by the systems approach This approach takes full account of economic losses, risks to human health and safety, the environment, energy requirements and damage to those organisms that we do not want to affect.

Dr William Olkowski, one of the nation's leading IPM experts, defines integrated pest management as a "technical decision making system that combines all available pest control techniques into a program for suppressing pest populations below injury levels " (Olkowski, Wm , et al, "Integrated Pest Management, Some Basic Concepts for Plan Maintenance Personnel", Center for the Integration of the Applied Sciences, October, 1979.)

University of California Entomologists, Dr M L. Flint, who currently is employed by the California State Legislature as advisor on pest management laws, and R van den Bosch, Chairman until his death of the Division of Biological Control at the University of California, Berkley, Guggenheim Fellow, and consultant to the Ford Foundation, USEPA, and the United Nations on Integrated Pest Management, give a more detailed definition.

> Ecologically-based pest population management which utilizes knowledge, monitoring, decision making criteria, materials and methods in concert with natural mortality factors. (Flint, M L and R van den Bosch, A Source Book on Integrated Pest Management, p 173.)

The following components of IPM are discussed below.

A Prevention

One of the basic tenets of the IPM systems approach is prevention of conditions favoring the introduction of pest species In defining

a pest management systems approach, Secretary Bergland points out the importance of prevention on page two of the above mentioned memorandum (Bergland, ibid)

> With existing technology, the most frequently used strategy is to manage local pest populations, such as on a field by field basis Other major strategies are prevention, area wide management, or elimination of pest species from defined areas Memo No 1929, p 2

The Forest Service Manual section dealing with IPM is very specific on the subject of importance of prevention FSM § 2140 3(2) says that

> IPM includes management of forest resources in a manner that is not conducive to the development and perpetuation of pest problems.

FSM § 2141 7 goes on to say that

> [T]he regulatory component of integrated pest management is preventive in nature It also includes preventive measures taken to retard the spread of pest infestations

NFMA § 219.13(b)(3) also recognizes prevention and its importance in IPM programs

> All management practices will....prevent or reduce serious longlasting hazards from pest organisms under the principles of integrated pest management . 44 Fed. Reg 53990 (Sept. 17, 1979).

For the above stated reasons, techniques should be examined and mentioned whereby future vegetation problems will be prevented This examination should be included in the final forests plans 1

VI-39

RESPONSE TO NEZ PERCE COUNTY WEED CONTROL (Continued)

1) Since the release of the Proposed Forest Plan we have developed and written direction for dealing with noxious weeds in the Clearwater. We have followed the policies and direction from the Final Northwest Area Noxious Weed Control Program Environmental Impact Statement (December 1985). The noxious weed situation report is included in the Forest Plan.

B. Knowledge/Monitoring

The environmental impact statements need to address the knowledge/information or monitoring/sampling element of integrated pest management. 2

As an example, the pest manager must have an understanding of the biology and ecology of brush/conifer relationships and an awareness of how both are regulated and influenced by other factors in the surrounding ecosystem, this is the knowledge/information element of integrated pest management In addition, the pest manager must also be in contact with specific data on each site

Groundwork, Inc , a forestry research group composed of scientists and forest workers, state in their report entitled, "Willamette Brush Control Study Project, Revised Preliminary Report", December, 1979, Eugene, Oregon, page three·

> Well-designed, up to date conifer-brush growth surveys can provide more accurate information and pinpoint the "real" brush problem acreage more accurately than vague, outdated surveys Unfortunately, the latter appear to be widesread in the public land management agencies The reasons include lack of money allocated for such surveys, shortage of personnel available to do a thorough job, and little or no precedent for gathering precise, useful vegetation growth data while surveying young units. Instead of only stocking level, estimated percentage overtopped, and brush species present, a good survey should include plots measuring the annual growth increment of crop trees, brush density, and location of crop trees with regard to brush (both vertical and horizontal positioning) If there is insufficient personnel, then contracting to the private sector for stand exams could benefit both the Forest Service and the forest communities

The official USDA policy on management of pest problems as defined in the Secretary's Memorandum No 1929 states that

> [t]he Department recognizes the need to speed the development and use of reliable integrated pest management practices Current Department programs include.. monitoring pest populations, and the integration , demonstration and evaluation of effective pest management systems resource management practices

RESPONSE TO NEZ PERCE COUNTY WEED CONTROL (Continued)

2) The Final Forest Plan does now contain direction to implement integrated pest management programs. The Forest Plan is not a site specific document and therefore cannot include the specific analysis for site specific projects. Compliance with NEPA and other laws will be accomplished through individual projects.

FSM § 1954.2 states that

> [a]ctions will be monitored to insure that necessary adjustments are made to achieve desired environmental effects, and anticipated results and projections are reviewed The monitoring costs are a part of project costs

The environmental impact statements need to develop and mention systems of monitoring or surveying to be used to determine site specific pest vegetation management needs **2**

Flint and van den Bosch observed that monitoring is *important* in the development of integrated pest management programs at two levels: (1) for research and (2) for actual resource maintenance. Monitoring for research purposes (e g to set up economic thresholds or action levels, to evaluate the influence of weather, soil micro-flora, aspect, etc , to gauge the effectiveness of a potential treatment action or to determine the most efficacious and economical time to apply a given treatment) is exploratory and requires a careful watch on all the ecosystem components On the other hand, monitoring systems which can be effectively used by pest managers in working IPM situations must be as quick, inexpensive and simply executed as possible, while still giving an evaluation of the field situation which is both accurate and useful. (Flint, Mary Louise and Robert van den Bosch, "A Source Book for Integrated Pest Management", May, 1977)

Each management situation is unique Different sites differ in soil type,moisture availability, species composition, including beneficial brush species,height and proximity associations of brush/conifers, management practices and a host of other variables which can directly or indirectly influence brushfield relationships Likewise, these influences change over time, most markedly in severe winter-kill or animal influence situations. To keep in touch with these site-specific relationships and fluctuations, the pest manager must monitor the managed ecosystem (Flint and van den Bosch, ibid.)

Therefore, monitoring and sampling systems need to be developed in the environmental statements.

C. Decision Making Criteria

Additionally, the environmental statements need to consider methods for site specific economic analysis for use in determining economic action levels 2

Flint and van den Bosch state in their publication, A Source Book on Integrated Pest Management

> There is, of course, little point in sampling pest populations in a resource management system unless these population densities can somehow be meaningfully related to potential pest damage

Although the mere presence of brush is enough to cause some forest managers to spray herbicides or take other action to kill or control brush, integrated pest management programs recognize that in many cases, such treatments are unwarranted Groundwork, Inc , puts it this way

> It has often been acknowledged by forest researchers that conifer hardwood ecological relationships are not very well understood Many critical variables, such as light intensity and wave length, soil moisture at different depths, soil surface temperatures, nutrient cycling, and others, do not have enough geographically diverse, large-scale field measurements to put the theoretical relationships into a framework of reality In the Forest Service district worksheets, unfortunately, phrases such as "moisture competition" are too often assumed and used without field verification. The mere presence of brush seems to be regarded as justification for brush control (Emphasis that of the authors, WILLAMETTE BRUSH CONTROL STUDY PROJECT, page 12)

Accordingly, every effort should be made to avoid unnecessary treatments

The Secretary's Memorandum No 1929 states that

> .the Department will conduct and support cooperative research on the economics of pest management methods, systems and strategies...

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Control action thresholds are a vital part of any IPM system or program and are consistent with FSM § 2140 2

> Objective To insure optimal pest management with respect to economic efficiency while achieving management objectives.

The fundamental reason for determining such economic thresholds is to differentiate between the mere presence of a pest and the occurrence of that pest in densities high enough to cause significant damage (Flint and van den Bosch, ibid) The same can be said for brush/conifer relationships For instance, if tolerant species dominate the conifer population on a site, or intolerant species are not being overtopped or suppression is not occurring because of ameliorating effects of brush species, then treatments would not be economical, since little added crop tree growth could be expected to result from treatment. As Groundwork, Inc , states

> The per-acre costs would be slight compared to the savings from better management that would result [from comprehensive site-specific brush surveys] They would save money by detecting the "waste" in excessive brush control programs, leaving more money available for effective site specific treatments and other badly needed re-forestation and stand improvement projects (Ibid , page 3)

Furthermore, economic thresholds will vary according to the efficacy and cost of the selected treatment method (E Newton, January, 1979, "An Economic Analysis of Herbicide Use for Intensive Forest Management", Part II, Chapter 5)

Therefore, the ES' need to develop workable criteria for determining economic treatment thresholds

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D. Ecological Foundation/Integration

Still further evidence of the lack of the development of a significan IPM alternative can be seen in the fact that the environmental statements fail to integrate any of the varied pest problems present in the three forests' ecosystems. 2

FSM § 2141.8 states that

> [a]nother aspect of combining the various components of IPM is to give multidisciplinary consideration to all of the pests (insects, diseases, rodents, weeds, etc) that may be causing damage in the same forest ecosystem Solving one pest problem without consideration of other pests or their causes may aggravate some situations.

Even though the three forests in question are trying to deal with a wide range of pest problems such as brush, noxious weeds, gophers, coyotes, grasshoppers, spruce budworm, etc , no multidisciplinary consideration is given to these pest problems As pointed out in the above mentioned FSM section, "solving one pest problem without consideration of other pests or their causes may aggravate some situations " For example, 2,4-D has the ability to cause outbreaks of insects such as grasshoppers. (Eisner, T E., "2,5-Dichlorophenol (From Ingested Herbicide?) in Defensive Secretion of Grasshopper", Science 172:277-278, April, 1971 Presented in testimony at CATH appeal hearing, Missoula, Montana, September 11, 1978)

Insects play a definite and very important role in the forest ecosystem and in the development of IPM strategies.

One of our greatest concerns is the failure of the environmental statements to develop an integrated pest management plan that deals with noxious weed prevention, eradication, containment, quarantine and control. 2

Over 65% of Idaho is federally-owned, with USDA Forest Service being the largest landholder. Most of the weeds on Idaho's noxious

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weed list are foreign in origin and originally were small infestations that could have been treated effectively before infestations spread to millions of acres Unfortunately, natural predators did not arrive with weeds, consequently, the entire state is infested with foreign weeds, causing over $530 million in annual crop prodution losses (Idaho State Integrated Weed Management Plan, Proposal Synopsis, CEQ, January, 1980) According to the Idaho Department of Agriculture, noxious weeds have become the number one pest in Idaho, far exceeding plant diseases and insects (Ross, Eugene P , "Proposed Idaho Department of Agriculture Program for the Control and Eradication of Designated Noxious Weeds in Idaho," Memorandum to All Committee Members of the Governor's Advisory Committee on Noxious Weed Control", December 13, 1978, page 1) It is critical that the federal government, as the largest landholder in the state, begin to aggressively develop an integrated approach to deal with all pest vegetation management problems This approach should be addressed in the environmental statements As former Idaho State Weed Coordinator, Eugene Ross, points out

> [i]f we adopt and incorporate IPM in Idaho on specific pests then all disciplines of IPM are going to have to be utilized - namely education, research, and implementation. If implementation is ignored then IPM concepts are out of balance and will probably be doomed to failure Other terms such as prevention, eradication, containment and quarantine are also going to have to be incorporated into our IPM thinking along with the proposed methods and tools being promoted in the IPM approach. (Personal communication from Eugene Ross to CATH, January 28, 1980. Appendix A)

Historically, IPM efforts have been concentrated in the area of insect and disease control (Flint and van den Bosch, ibid), while noxious weed control has been slanted toward a herbicide tactic approach However, as time has passed, land managers and weed specialists have become aware that herbicides alone have not stopped

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the advancement of noxious weeds Consequently, in recent years, weed managers/specialists have begun to reevaluate weed control efforts, searching for better ways to deal with noxious weeds

The development of IPM weed plans is the most recent event in the advancement of weed control Idaho has played a significant role in its development. By 1978, economic losses attributable to noxious weeds on Idaho farm and rangelands had reached such critical proportions that Governor John Evans appointed a broadly-representative committee to revise the state's noxious weed law into an effective and enforceable code Additionally, the Idaho Department of Agriculture's state weed coordinator developed what is believed to have been the first IPM weed plan in the U.S for an entire state (SEE Appendix B, Ross, Eugene,"Looking into the Future,"1979) In developing the plan the Idaho Department of Agriculture placed designated noxious weeds into four categories and then assigned the degree of priority and emphasis that would be placed on preventing, controlling, or eradicating particular weed species The categories are as follows·

Category 1 Highest priority is given to Category 1 weeds It is assumed that none of the Category 1 weeds are present in the state, but the potential for infestation is imminent Emphasis in this category is placed on awareness and education If a Category 1 weed should appear an emergency can be declared and full quarantine and eradication measures taken

In the past, small infestations of new invaders have been ignored until they reached the point where eradication methods were no longer feasible By discovering new invaders while infestations are small enough to control will save millions of dollars in the future.

For the above stated reasons an action plan should be incorporated into your IPM plans which addresses Category 1 weeds. The action plan should include, but not be limited to

(a) Initiate continuing education and awareness program to help Forest Service personnel and forest users recognize Category 1 weeds;